Testimony before the Subcommittee on Oversight and Investigations
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Thank you Chairman Stupak and subcommittee members.

You have requested that as the Chief Executive Officer of Cargill I speak to you today about the production of meat products in Modified Atmosphere Packaging – known as MAP. We, and the food science community consider this packaging to be one of the most important food safety innovations ever.

My testimony today has been crafted with a great deal of input from our research and development leaders, and since I am not a scientist, I will be relying on their expertise for any questions of a scientific nature.

Food Packaging Innovations

Packaging innovations have a long history of improving food safety. Many advances now seem simple – canned goods, pasteurization, vacuum packages, and tamper resistant fresh food packaging, just to name a few. There was a time when the salt curing of meat was the most advanced package available, and it performed fairly well as a critical health protection for a thousand years or so. We now know a lot more about food safety and have many, many more technologies available to help make food as safe and accessible to consumers in ways never before imagined.

Basic food science and food safety principles have evolved, and these principles direct some of the most critical research and innovation of our product offerings. We know the importance of prohibiting cross contamination. We know about the importance of controlling temperature and moisture, of controlling the oxygen and interior atmosphere of a package, and controlling pH. We also know that processing technology, preservatives and additives play a critical role in consumer protection.

Consumer demands and scientific knowledge also direct research and innovation. Today's consumers want a fresh and wide variety of perishable items including produce, fish and meat. They often want products that can be labeled as natural or organic. And, they want these items to be available at their local stores, year-round, for their convenience.

It is this drive to safely satisfy consumer demand that leads us to the technologies of today.

Packaging Gases, Food Products, and Food Safety

Scientists have long known the importance of controlling the interior atmosphere of food packages. One of the earliest applications of Modified Atmospheric Packaging (MAP) was in 1927, when storing apples in an atmosphere of reduced oxygen and increased carbon dioxide resulted in increased shelf life.

In the 1930's a modified atmosphere was used in the storage and transportation of fruit in the holds of ships, and increasing the carbon dioxide concentration surrounding beef carcasses transported long distances was shown to increase shelf life by up to 100%.

Today, nitrogen is probably the most widely used gas in food packaging. Nitrogen is often used as the principle gas to flush oxygen out of packages that will be vacuum packed. The Food and Drug Administration and the United States Department of Agriculture have long accepted the safe use of nitrogen as a packaging gas.

As previously mentioned, carbon dioxide has also been utilized as a key packaging gas. Fresh fruits and vegetables are often shipped in a mixture of gases, where the carbon dioxide level plays a key role in both suppressing microbial activity as well as helping regulate the ripening process which in turn greatly extends shelf life, and helps guarantee product safety.

The careful use and application of this gas has long benefited consumers by helping the produce industry manage supplies and meet consumer demands. For perishable items, like bananas, we in the U.S. do not have the climate to produce adequate quantities to meet demand. Carbon dioxide and other packaging gases allow the American consumer to become accustomed to a perpetual supply of fresh fruits and vegetables. Without Modified Atmosphere Packaging, we would not have fresh bananas, berries or apples in winter, and packaged or organic salad greens.

Much like carbon dioxide, gas mixtures containing ethylene are critical for a wide number of fresh fruits and vegetables. Ethylene promotes the ripening of apples, avocados, bananas, citrus, dates, mangos, melons, papayas, pears, pineapples and tomatoes.

In the context of historical innovations, the use of carbon monoxide is relatively new. The Food and Drug Administration approved the use of this gas in 2002. It is used in combination with carbon dioxide and nitrogen, all of which have important food safety and freshness properties. Unique to the FDA approval is that we asked for, and FDA supported, the mandate that foods packaged in this format must include tamper-proof freshness dating.

Modified Atmosphere Packaging and Case Ready Meats

Through a MAP system, meat is packaged at a central processing plant and is then delivered to the retail grocery store in a tray covered with a protective film. This helps eliminate the potential for cross contamination that can come from human handling both at the retail store and in the home. The package is both leak-proof and tamper proof, adding additional consumer protections.

Mr. Chairman, you have recently raised the question that MAP packaging containing CO may allow meat to retain its characteristic red coloration for too long, potentially masking spoilage. I appreciate the opportunity to help ensure that this technology is more fully understood and to convey our deep commitment to consumer protection.

Today beef is typically delivered to a grocery store in one of three ways – as boxed product sealed in a vacuum packaged bag, or as individual packages with high oxygen or low oxygen modified atmosphere packages, ready for display in the meat case for consumer purchase.

Boxed, vacuum-packaged product is opened at the grocery store and cut into steaks or roasts and then wrapped for retail display. Case ready products come completely packaged and labeled, and can be taken from a lined box and placed in the retail display. The case ready system eliminates the need to open, handle, and re-package the product in the store, greatly reducing the chances of cross contamination.

Meat products in a vacuum bag have a shelf life of about 35 days. The shelf life of case ready products will vary depending on the packaging technology used.

There are two types of case ready MAP product offerings – those packaged in a high oxygen (high-ox) format and those in a low oxygen (low-ox) format. We believe that both are good formats, but the low-ox format, in many respects, has significantly better functionality, especially in the area of ensuring freshness and convenience for the consumer.

Steaks and roasts that are packaged in a low-ox environment have a shelf life roughly equivalent to the 35 days of the vacuum bag. Steaks and roasts in high-ox packaging have a shorter shelf life of only 14 or 15 days. You can observe this shelf life concern not only in meat packaging but also in produce. As a point of reference, note that the spoilage of a head of lettuce accelerates rapidly after the packaging is removed.

The technology in MAP produces a shelf life similar to packages using vacuum technology. And, it achieves this equivalent shelf life in a manner that is much more convenient and appealing to consumers.

Protecting freshness and shelf life are indeed critical. Beyond preserving freshness and reducing microbial activity, low-ox packaging also protects against flavor degradation. High levels of oxygen in a high-ox packaging such as a traditional tray wrap will deteriorate the flavor of meat. Many university studies have shown that meat in a high ox package can look acceptable, but will have a significantly less acceptable flavor than low oxygen products. Low oxygen packaging helps to maintain the natural flavor of meat.

There are additional benefits of low-ox packaging. By giving retailers the shelf life similar to vacuum packages in a direct to consumer format, small retail stores in both rural and very urban areas have the opportunity to offer diverse product lines. The packaging reduces waste, because retailers can make more efficient purchasing decisions. The packaging is also more tamper-proof, through the use of imprinted use-by or freeze-by instructions that cannot be removed.

Oxygen and Product Color

Let me cover just a little bit about the science of our packaging technology as outlined by our R&D team.

One of the challenges with low oxygen packaging is that the removal of oxygen has a visual impact on meat coloration. As you may recall from high school biology, blood appears bluish when it has not been exposed to oxygen. Once exposed to oxygen, blood becomes red. This same principle also applies to meat coloration and MAP packaging.

While substantial food safety benefits are attained in low oxygen packaging, a dull red to almost purplish discoloration of the product would make the product unattractive to the consumer. In contrast, the traditional grocery tray is more exposed to oxygen, and therefore it appears red.

To gain the functional and appearance performance for low-ox packaging, we substitute the oxygen with other acceptable and safe gasses. One of these gasses we use involves a trace amount of carbon monoxide (.4 percent). As previously noted, this is fully approved by the FDA, based on volumes of scientific study.

As the committee is no doubt aware, many of the leading food scientists have submitted papers and testimony that show the superior freshness and food safety performance of this packaging. I want to note that with all MAP products, the packaging gas dissipates immediately once the package is opened. Once the package is opened, product degradation continues in a manner similar with other opened packaging systems.

Continual Innovations in Food Safety and Packaging Technology

We want consumers to have all the benefits of MAP. But to do so, the package must be as attractive as competing products in the case. We believe it unfortunate that there has been misinformation about low oxygen MAP. We have seen some retail customers who have found this technology serves them and their customers best, find the need to back away from it because of public pressure campaigns led by a Michigan-based competitor offering a different technology. As advertised, this competing technology uses a different method to inhibit oxidation, and includes a masking effect for flavor. Our technology has no such feature. We are hopeful that greater understanding of the facts will help to abate this pressure.

We recently had the opportunity to host investigators from the House Committee on Energy and Commerce at one of our case ready plants. We learned clearly that the most important issue concerning committee members was the potential that a consumer may not fully understand that color is not the only indicator of freshness. For this reason, we will add wording to our labeling, pending USDA approval, to include the statement, "Color is not an indicator of freshness. Please refer to use or freeze by dates." We believe this effectively addresses the concerns of the Committee in protecting public health, while not undermining the adoption of the safety and convenience offered through case ready packaging.

We stand firmly by our previous statements that color is not a proper indicator of freshness or safety, and we support the FDA's and the USDA's decision-making. While there are many foods like eggs, ketchup, salad dressing, and carrots that all maintain their coloration, only observing freshness dates will tell you when the products are past their peak of flavor or quality.

My point is this – science should guide our food regulatory decisions. A well orchestrated, but non-science based press campaign, should not. Consumers suffer a great disservice when competitive pressures drive a debate that leads consumers away from the superior food safety and freshness performance inherent in this particular packaging.

I'm sure the individuals in the salted meat industry were discouraged when new innovations led to canning and ultimately vacuum packaging. However, consumers were better off, and most importantly, more safely served as innovations in food safety and preservation continued.

The need for continual food safety innovations and product marketing is recognized by all of us. We want our competitors to continue to innovate. We are going to continue to innovate. We encourage our suppliers to innovate. Consumers demand it; food safety demands it; it raises the bar for everyone; and it's the right thing to do.

Cargill is deeply committed to serving the needs of our customers. The low oxygen technology that we have discussed today is an important evolution in packaging technology and is but one example of our commitment.

I want to thank this Committee for its commitment and leadership in the area of food safety. I want to recognize the work of the committee staff. I would be pleased to answer any questions to the best of my ability, and ask that the Committee allow my colleague Dr. Eilert to answer questions of science that are beyond my expertise.