

The Kosher and Halal Food Laws

J.M. Regenstein, M.M. Chaudry, and C.E. Regenstein

Knowledge of the kosher and halal dietary laws is important to the Jewish and Muslim populations who observe these laws and to food companies that wish to market to these populations and to interested consumers who do not observe these laws. The kosher dietary laws determine which foods are “fit or proper” for Jews and deal predominantly with 3 issues: allowed animals, the prohibition of blood, and the prohibition of mixing milk and meat. These laws are derived from the Torah and the oral law received by Moses on Mount Sinai (Talmud). Additional laws cover other areas such as grape products, cheese, baking, cooking, tithing, and foods that may not be eaten during the Jewish festival of Passover. Halal laws are derived from the Quran and the Hadith, the traditions of the prophet Muhammad. As with Kosher laws, there are specific allowed animals and a prohibition of the consumption of blood. Additionally, alcohol is prohibited.

Introduction

The objective of this paper is to describe the kosher and halal laws as they apply in the food industry, particularly in the United States. To understand their impact in the marketplace, one must have some understanding of how kosher and halal foods are produced, and how important kosher and halal compliance is to consumers.

Kosher and halal laws

We will start by focusing on the religious significance of the dietary laws for Jews and Muslims. The kosher (kashrus) dietary laws determine which foods are “fit or proper” for consumption by Jewish consumers who observe these laws. The laws are Biblical in origin, coming mainly from the original five books of the Holy Scriptures, the Torah, which has remained unchanged. At the same time that Moses received the Ten Commandments on Mount Sinai, Jewish tradition teaches that he also received the oral law, which was eventually written down many years later in the Talmud. This oral law is as much a part of Biblical law as the written text. Over the years, the meaning of Biblical kosher laws has been interpreted and extended by the rabbis to protect the Jewish people from violating any of the fundamental laws, and to address new issues and technologies. The system of Jewish law is referred to as “halacha.”

The halal dietary laws determine which foods are “lawful” or permitted for Muslims. These laws are found in the Quran and in

Over the years, the meaning of Biblical kosher laws has been interpreted by the rabbis to protect the Jewish people and to address new issues and technologies

the Sunna, the practice of the Prophet Muhammad, as recorded in the books of Hadith, the Traditions. Islamic law is referred to as Shari’ah and has been interpreted by Muslim scholars over the years. The basic principles of the Islamic laws remain definite and unaltered. However, their interpretation and application may change according to the time, place, and circumstances. Besides the 2 basic sources of Islamic law, Quran and the Sunna, 2 other sources of jurisprudence are used in determining the permissibility of food, when a contemporary situation is not explicitly covered by the first 2 basic sources. The first is Ijma, meaning a consensus of legal opinion. The second is Qiyas, meaning reasoning by analogy. In the latter case, the process of Ijtihad, or exerting oneself fully to derive and answer to the problem, is used.

Current issues of genetically modified organisms (GMO), animal feed, hormones, and so on, are discussed in the light of these two concepts and several other lesser sources of Islamic jurisprudence. Unconventional sources of ingredients, synthetic materials, and innovations in animal slaughter and meat processing are some of the issues Muslim scholars are dealing with in helping consumers make informed choices.

Why do Jews follow the kosher dietary laws? Many explanations have been given. The explanation by Rabbi I. Grunfeld, below, summarizes the most widely held ideas about the subject (Grunfeld 1972).

It is important to note that, unlike kosher laws, the health aspects of eating are an important consideration with halal laws. These laws are viewed by the Jewish community as given to the community without a need for explanation. Only in modern times have some people felt a need to try to justify them as health laws. For a discussion of why kosher laws are not health laws, please see J.M. Regenstein (1994).

“And ye shall be men of a holy calling unto Me, and ye shall not eat any meat that is torn in the field” (Exodus XXII:30). Holiness or self-sanctification is a moral term; it is identical with . . .

moral freedom or moral autonomy. Its aim is the complete self-mastery of man.

“To the superficial observer, it seems that men who do not obey the law are freer than law-abiding men, because they can follow their own inclinations. In reality, though, such men are subject to the most cruel bondage; they are slaves of their own instincts, impulses, and desires. The first step towards emancipation from the tyranny of animal inclinations in man is, therefore, a voluntary submission to the moral law. The constraint of law is the beginning of human freedom . . . Thus, the fundamental idea of Jewish ethics, holiness, is inseparably connected with the idea of law; and the dietary laws occupy a central position in that system of moral discipline which is the basis of all Jewish laws.

“The three strongest natural instincts in man are the impulses of food, sex, and acquisition. Judaism does not aim at the destruction of these impulses, but at their control and indeed their sanctification. It is the law which spiritualizes these instincts and transfigures them into legitimate joys of life.”

Why do Muslims follow the halal dietary laws? The main reason for the observance of the Islamic faith is to follow the Divine Orders.

“O ye who believe! Eat of the good things wherewith WE have provided you, and render thanks to ALLAH if it is He whom ye worship.” (Quran II:172)

God reminds the believers time and again in the Holy Scripture to eat what is “Halalan Tayyiban,” meaning “permitted and good or wholesome.”

“O, Mankind! Eat of that which is Lawful and Wholesome in the earth . . .” (Quran II:168)

“Eat of the good things. We have provided for your sustenance, but commit no excess therein.” (Quran XX:81)

Again in Sura 6 of the Quran, entitled “Cattle,” Muslims are instructed to eat the meat of animals upon which Allah’s name has been invoked. This is generally interpreted as meaning that an invocation has to be made at the time of slaughtering an animal.

“Eat of that over which the name of Allah hath been mentioned, if ye are believers in His revelations.” (Quran VI:119)

While Muslims eat what is permitted specifically or by implication, albeit without comment, they avoid eating what is specifically disallowed, such as:

“And eat not of that whereupon Allah’s name hath not been mentioned, for lo, It is abomination. Lo! The devils do inspire their minions to dispute with you. But if ye obey them, ye will be in truth idolators.” (Quran VI:121)

The majority of Islamic scholars are of the opinion that this verse deals with proper slaughtering of the allowed animals.

Since Muslim dietary laws relate to Divine permissions and prohibitions, if anyone observes these laws, he or she is rewarded in the hereafter, but if anyone violates these laws, he or she may receive punishment accordingly. The rules for those foods that are not specifically prohibited may be interpreted differently by various scholars. The things that are specifically prohibited are just a few in number, and are summarized in the following verses:

“Forbidden unto you are: carrion and blood and swine flesh, and that which hath been dedicated unto any other than Allah, and the strangled, and the dead through beating, and the dead through falling from a height, and that which hath been killed by

the goring of horns, and the devoured of wild beasts save that which ye make lawful, and that which hath been immolated to idols. And that ye swear by the divining arrows. This is abomination.” (Quran V:3)

Although these permissions and prohibitions as a divine injunction are enough for a Muslim to observe the laws, it is believed that the dietary laws are based on health reasons that suggest impurity or harmfulness of prohibited foods.

The kosher and halal market

Why are we concerned about kosher and halal in the secular world? Because both kosher and halal are important components of the food business. Most people, even in the food industry, are not aware of the breadth of foods that are under religious supervision. This section provides background on the economic aspects that make it important for the food industry to have a better understanding of kosher and halal.

The kosher market—according to Integrated Marketing, an advertising agency specializing in the kosher food industry—comprises almost 75000 products in the United States. In 2001, about 165 billion dollars worth of products were estimated to have a kosher marking on them. The deliberate consumers of kosher food; that is, those who specifically look for the kosher mark, are estimated to be more than 10 million Americans and they are purchasing almost 7 billion dollars worth of kosher products. Annually, almost 10000 companies produce kosher products and the average U.S. supermarket has 13000 kosher products. Fewer than 1/3, and possibly as low as 20%, of kosher consumers are Jewish (900000 year-round consumers). Other consumers who at times find kosher products helpful in meeting their dietary needs include Muslims, Seventh Day Adventists, vegetarians, vegans, people with various types of allergies—particularly to dairy, grains, and legumes—and general consumers who value the quality of kosher products, even though there is rarely a one-to-one correlation between kosher and these consumers’ needs. Hebrew National’s slogan, “We report to a higher authority” and “You don’t have to be Jewish to love Levy’s Rye Bread,” are two of the more famous campaigns used to advertise kosher products to nonkosher consumers. *AdWeek* magazine in the early 1990s called kosher “the Good Housekeeping Seal for the ‘90s.” By undertaking kosher certification, companies can incrementally expand their market by opening up new markets. It should be noted that although many supermarkets define the kosher consumer as someone who only purchases products with kosher supervision symbols on the package, but there are products that do not always need to have a supervision mark, as we will describe. This paper also includes information that might assist kosher supervision agencies in addressing the specific needs of these other consumer groups.

The Muslim population in the U.S. is developing a stronger marketplace presence each year. Over the past 30 years, many halal markets and ethnic stores have sprung up, mainly in the major metropolitan areas. Most of the 6 to 8 million Muslims in North America observe halal laws, particularly the avoidance of pork, but the food industry has for the most part ignored this consumer group. Although there are excellent opportunities to be realized in the North American halal market, even more compelling opportunities exist on a worldwide basis as the food industry moves to a more global business model. The number of Muslims in the world

Unconventional sources of ingredients, synthetic materials, and innovations in slaughter and processing are some of the issues Muslim scholars are dealing with

Most of the 6 to 8 million Muslims in North America observe halal laws, but the food industry has for the most part ignored this consumer group

is more than 1.3 billion people, and trade in halal products is about 150 billion dollars (Egan 2002). Many countries of South Asia, Southeast Asia, the Middle East, and Northern Africa have predominantly Muslim populations. Although only about 15% of India's population is Muslim, it is the second largest Muslim country in the world, after Indonesia. In many countries, halal certification has become necessary for products to be imported.

Although many Muslims purchase kosher food in the U.S., these foods, as we will see in the section on Halal, do not always meet the needs of the Muslim consumer. The most common areas of concern for the Muslim consumer, when considering purchasing kosher products, are the use of various questionable gelatins in products produced by more lenient kosher supervisions and the use of alcohol as a carrier for flavors as well as a food ingredient. The details of both ideas will be developed later in this paper.

With the agreement of the client company, kosher supervisors can address the needs of the non-Jewish markets. A document establishing preliminary guidelines for making kosher appropriate for all of the groups mentioned above without violating Jewish law has been prepared (Regenstein, personal communication) and serves as a basis for a multicultural kosher dining program at Cornell Univ. (dining.cornell.edu/docs/multicultural_doc.pdf). Other universities are also exploring kosher/halal and multicultural food options.

Although limited market data is available, the most dramatic data illustrating the impact of kosher certification in the marketplace has been provided by the Coors Brewing Co. According to its market analysis, its market share in the Philadelphia, Pa., market went up 18% when the company went kosher. Somewhat less dramatic increases were observed in other cities in the Northeast. Dannon Yogurt experienced a growth in sales when it switched from a "lenient" kosher certification to one that was normative mainstream (see the section on "Dealing with Kosher and Halal Supervision Agencies"). A Northeastern U.S. soda-bottling company let its kosher certification lapse and, as a result, their sales dropped significantly. The company quickly got recertified!

In recent years, many of the large national companies have gone kosher. For some, the effort has been quite extensive. For example, when Nabisco made many of its cookie products kosher, the process of equipment kosherization (see section on Equipment Kosherization) took more than three years before its many bakeries around the country became kosher and all its kosher products could finally be marketed in the U.S. To consider whether a company wants to participate in the kosher (or halal) market, its leaders need to have some knowledge about the laws themselves to determine potential profitability.

Kosher

The kosher dietary laws

The kosher dietary laws predominantly deal with three issues, all focused on the animal kingdom:

- a. Allowed animals
- b. Prohibition of blood
- c. Prohibition of mixing of milk and meat

Other consumers who at times find kosher products helpful in meeting their dietary needs include Muslims, Seventh Day Adventists, vegetarians, vegans, people with various types of allergies

Additionally, for the week of Passover (in late March or April) restrictions on "chometz," the prohibited grains (wheat, rye, oats, barley, and spelt) in other than unleavened form—and the rabbinical extensions of this prohibition—lead to a whole new set of regulations focused, in this case, on the plant kingdom.

Ninety-two percent of American Jews celebrate Passover in some way, making it the most observed holiday in the Jewish calendar. It also accounts for about 40% of the sales of kosher products to the Jewish community. Although only 20 to 33% of the kosher market in the United States is Jewish, these consumers account for more than half of the total dollar volume of the kosher market, since they purchase kosher food more consistently.

In this paper, we will also discuss additional laws dealing with special issues such as grape juice, wine, and alcohol derived from grape products; Jewish supervision of milk; Jewish cooking, cheesemaking and baking; equipment kosherization; purchasing new equipment from non-Jews; and old and new flour.

The kosher laws are an internally consistent logic system and have an implied "science" behind them—which may or may not agree with modern science. This system is the basis upon which rabbis work through problems and come up with solutions.

Allowed animals

Ruminants with split hoofs that chew their cud, traditional domestic birds, and fish with fins and removable scales are generally permitted. Pigs, wild birds, sharks, dogfish, catfish, monkfish, and similar species are prohibited, as are all crustacean and molluscan shellfish. Almost all insects are prohibited such that carmine and cochineal, which are used as natural red pigments, are not permitted in kosher products by most rabbinical supervisors. However, honey and shellac (lac resin) are permitted, as will be further discussed later in this section.

Four classes of prohibited animals are specifically described in the Torah. These are those animals that have one kosher characteristic, but not both. For example, the rockbadger, the hare, and the camel chew their cud but do not have a split hoof; the pig has a split hoof but does not chew its cud. Neither category is more or less nonkosher; none is kosher, and these examples are listed specifically only to clarify the text. In modern times, the prohibition of pork has often been the focus of both kosher and halal laws, since pork is such a major item of commerce. Interestingly, giraffe is a true ruminant and has a split hoof rendering it kosher, with specific guidelines about proper slaughtering procedures.

With respect to poultry, the traditional domestic birds (that is, chicken, turkey, squab, duck, and goose) are kosher. Birds in the rattrie category (ostrich, emu, and rhea) are not kosher, as the ostrich is specifically mentioned in the Bible (Lev. XI:16). However, it is not clear whether the animal of the Bible is the same animal we know today as an ostrich. There is a set of criteria that are sometimes referred to in trying to determine if a bird is kosher. The kosher bird has a stomach (gizzard) lining that can be removed from the rest of the gizzard. It cannot be a bird of prey. Another issue deals with tradition; for example, newly discovered or developed birds may not be acceptable. Some rabbis do not accept wild turkey, while some do not accept the featherless chicken.

The only animals from the sea that are permitted are those with fins and scales. All fish with scales have fins, so the focus is on the scales. These must be visible to the human eye and must be removable from the fish skin without tearing the skin. Cycloid and

In many countries, halal certification has become necessary for products to be imported

ctenoid scales found on traditional fish are generally considered acceptable, but the ganoid and placoid scales of sharks, gar, and so on are not. A few fish remain controversial, probably swordfish (whose scales do not seem to belong to any of the biologists' standard scale types) being the most discussed fish. The Conservative movement also permits sturgeon, which most Orthodox authorities consider nonkosher.

Most insects are not kosher. The exception includes a few types of grasshoppers, which are acceptable in the parts of the world where the tradition of eating them has not been lost. The edible insects are all in the "grasshopper" family identified as permitted in the Torah due to their unique "jumping" movement mechanism. Again, only visible insects are of concern; an insect that spends its entire life cycle inside a single food is not of concern. The recent development of exhaustive cleaning methods to prepare prepackaged salad vegetables eliminates a lot of the insects that are sometimes visible, rendering the product kosher and, therefore, usable in kosher foodservice establishments and in the kosher home without requiring extensive special inspection procedures. Although companies in this arena go to a great deal of effort to produce an insect-free product, some kosher supervision agencies remain unconvinced and only certify those products (or particular production lots—for example, one day the production may be acceptable and the next day it might not) that meet their more stringent requirements.

The prohibition of insects focuses on the whole animal. If one's intent is to make a dish where the food will be chopped up in a food processor, then one may skip the elaborate inspection of fruits and vegetables for insects and assume that the presence of insect parts does not render the food nonkosher. There are guidebooks describing which fruits and vegetables in particular countries need inspection, and recommended methods for doing this inspection are included. Kosher consumers have appreciated the use of pesticides to keep products insect-free, as well as the use of prepackaged vegetables that have been properly inspected. Modern integrated pest management programs that increase the level of insect infestation in fruits and vegetables can cause problems for the kosher consumer. Examples of problems with insects that one might not think about include insects under the "triangles" on asparagus stalks and under the "greens" of strawberries, and thrips on cabbage leaves. Kosher consumers and "mashgichim" (religious supervisors on site) are trained to properly inspect those fruits and vegetables that need to be examined. Because of the difficulty of properly inspecting them, many Orthodox consumers do not use brussels sprouts.

Honey and other products from bees are covered by a unique set of laws that essentially permits honey and beeswax. Other bee-derived materials; for example, royal jelly, are more controversial. An article by Rabbi Z. Blech (2004) discusses this unique set of materials and the special laws surrounding bees and honey. Most rabbis extend this permission to the use of lac resin or shellac, which is used in candy and fruit coatings to provide a shine.

Prohibition of blood

Ruminants and fowl must be slaughtered according to Jewish law by a specially trained religious slaughterer ("shochet") using a special knife designed for the purpose ("chalef"). The knife must be extremely sharp and have a very straight blade that is at least twice the diameter of the neck of the animal to be slaughtered. It is the process itself, and the strict following of the law, that makes a product kosher, and not the presence or absence of a blessing over the food. However, prior to slaughter the shochet does make a blessing. The animal is not stunned prior to slaughter. If the slaughter is done in accordance with Jewish law and with the highest standards of modern animal handling practices, the animal will die without showing any signs of stress. In 1958,

the U.S. Congress declared kosher slaughter and similar systems (such as halal, for example) to be humane, but included an exemption for preslaughter handling of the animal prior to kosher and halal slaughter. To deal with problems due to inappropriate preslaughter handling, the Food Marketing Institute, the trade association for many North American supermarkets, and the National Council of Chain Restaurants are developing a set of animal welfare-based kosher/halal standards for upright slaughter based on the American Meat Institute's guidelines that have existed for a number of years.

With respect to kosher, or "kashrus," supervision, slaughtering is the only time a blessing is said—and it is said before commencing slaughter. The slaughterer asks forgiveness for taking a life. The blessing is not said over each animal, an issue we will return to when discussing the Muslim concept of the meat of the "People of the Book." The rules for slaughter are very strict and the shochet checks the *chalef* before and after the slaughter of each animal. If any problem occurs with the knife, the animal becomes *treife*; that is, not kosher. The shochet also checks the cut on the animal's neck after each slaughter to make sure it was done correctly.

Slaughtered animals are subsequently inspected for visible internal organ defects by rabbinically trained inspectors. If an animal is found to have a defect, the animal is deemed unacceptable and becomes "treife." There is no trimming of defective portions as generally permitted under secular law. The general rule is that a defect is religiously important if it would lead to a situation where the animal could be expected to die within a year. Some rabbis invoke these rules in dealing with issues related to veterinary practices; for example, injections into certain parts of the animal's anatomy such as the neck of a chicken.

Consumer desire for more stringent kosher meat inspection requirements in the U.S. has led to the development of a standard for kosher meat that meets a stricter inspection requirement, mainly with respect to the condition of the animal's lungs. As the major site of halachic defects, the lungs must always be inspected. Other organs are spot-checked or examined when a potential problem is observed. Meat that meets this stricter standard is referred to as "glatt kosher," referring to the fact that the animal's lungs do not have any adhesions ("sirkas"). The word "glatt" means smooth, referring to the absence of sirkas on the lungs. The "bodek," or the inspector of the internal organs, is trained to look for lung adhesions in the animal both before and after its lungs are removed. To test a lung, the bodek first removes all sirkas and then blows up the lung using normal human air pressure or a bike pump. The lung is then put into a water tank and the bodek looks for air bubbles. If the lung is still intact, it is kosher. In the U.S., a glatt kosher animal's lungs generally have fewer than two adhesions, which permits the task to be done carefully in the limited time available in large plants. Some groups—particularly Jews who originated from countries under Muslim rule during the Dark Ages (that is, Sephardim)—require a total absence of adhesions even in adult animals. Such meat is referred to as "Beit Yosef" meat. Note that young red-meat animals must always be without adhesions. At this time we do not have a full understanding of what animal handling practices lead to higher incidences of lung adhesions, although pneumonia in the calf is certainly one consideration.

The use of the word "glatt" for any other kosher product, including poultry, is only meant to convey the message that a higher standard is being used. It would be more accurate to use the word "Menhadrin" (meaning a stricter standard), and this word is used on some U.S. products and in other countries. Nonglatt meat and nonmenhadrin poultry products encompass a larger percentage of the kosher marketplace (by volume).

Meat and poultry must be further prepared by properly removing certain veins, arteries, prohibited fats, blood, and the sciatic nerve. This process is called "nikkur" in Hebrew and "treiboring"

in Yiddish. The person who is specifically trained to do this is called a “Menacker.” In practical terms, this means that only the front quarter cuts of kosher red meat are used in the U.S. and most Western countries. Although it is very difficult and time-consuming to remove an animal’s sciatic nerve, necessity demands that this deveining be done in parts of the world where the hindquarter is needed in the kosher food supply. In some animals (deer, for example), it is relatively easy to devein the hindquarter. However, if there is no tradition of eating any hindquarter meat within a community, some rabbis have rejected the deer hindquarters for that community.

To further remove the prohibited blood, red meat and poultry must then be soaked and salted (“meli-cha”) within 72 h of slaughter. If this is not possible, then nonglatt meat is specially washed (“begissing”), and this wash procedure may be repeated for up to two more times, each time within 72 h of the previous washing. The soaking is done for .5 h in cool water; thereafter, the salting is done for 1 h with all surfaces, including cut surfaces and the inside cavity of a chicken, being covered with ample amounts of salt. The salted meat is then rinsed three times. The salted meat must be able to drain throughout and all the blood being removed must flow away freely. Shorter soaking and salting times are sometimes permitted; for example, when there is not enough time before the Sabbath or a holiday to complete the process.

The animal’s heart must be cut open and the congealed blood removed before beginning the overall soaking and salting process. Once the meat is properly koshered, any remaining “red liquid” is no longer considered “blood” according to halacha, and the meat can be used without further concern for these issues.

The salt used for koshering must be of a crystal size that is large enough that the crystals will not dissolve within the hour and must be small enough to permit complete coverage of the meat. The salt industry refers to this size crystal as “kosher” salt. Although most salt is religiously kosher, the term “kosher” in this case is referring to the grain size. The specific process of salting and soaking meat to make it ready for use is also referred to as “koshering” meat.

Because of its high blood content, liver cannot be soaked and salted, but must instead be broiled to at least more than half cooked using special equipment reserved for this purpose. The liver is then rinsed, after which it can be used in any way the user wishes. A small amount of salt is sprinkled on the liver. In theory, any meat can be broiled instead of soaking and salting. However, this has not been done for so many years that some rabbis no longer accept this alternative.

Some concerns have been raised about the salt level in kosher meat. Note that only the surfaces are salted, generally using primal cuts; that is, 20 to 40 lb pieces of meat, and that the penetration of the salt is less than a half centimeter in red meat (N.Y. Dept. of Agriculture and Markets, personal communication). Many pieces of meat, as consumed, have therefore not been directly subjected to the salt treatment. If salt content in a diet is a very important consideration, then one should cut off all surfaces and not use any of the drippings that come out during cooking. However, much of the salt that goes into the meat at the surface is lost during the cooking process.

Another issue that can arise when meat has not been soaked and salted is that of “kavoush.” For example, if meat trimmings sit in the blood released by meat for more than 24 h, the meat is

considered to be pickled and cannot subsequently be soaked and salted. This meat is therefore not kosher. When large totes are used for shipping meat, it is almost impossible to prevent kavoush. These totes should only be used if the meat will be removed within 24 h.

Any ingredients or materials that might be derived from animal sources are generally prohibited because of the difficulty of obtaining them from kosher animals. This includes many products that might be used in foods and dietary supplements, such as emulsifiers, stabilizers, and surfactants, particularly those materials that are fat-derived. Very careful rabbinical supervision would be necessary to assure that no animal-derived ingredients are included in kosher food products. Almost all such materials are available in a kosher form derived from plant oils. A possible exception might be a normative mainstream gelatin, which is now being produced from glatt kosher beef hides (see section on Gelatin). Also some rennet, the cheese-coagulating enzyme, is obtained from the dried fourth stomach of a kosher-slaughtered milk-fed calf.

There are a few concepts in Jewish law that permit materials to alter their status. The first is “Dvar Hadash,” or new entity. If something undergoes a sufficient transformation, as defined rabbinically, it may become a new entity. Another concept that may help create flexibility for food manufacturers is the concept of “dry as wood” where the “drying” is defined as natural drying for over a year. The concept is used in part to justify the use of natural calf rennet discussed above—the extraction of a chemical from such a material permits its use when it would not otherwise be permitted. Finally, there is the concept of “not fit for either a person or, less critically, for a dog.” If a material is unacceptable and would not even be eaten by a dog, then the source is not considered a food, which means that anything derived from it could be kosher. Note, however, that some rabbis argue that if an identifiable object; for example, a bone, is placed into such a mixture and is then recovered, that the item was not necessarily ever unfit for a dog.

Prohibition of mixing of milk and meat

“Thou shalt not seeth the kid in its mother’s milk.” (Exodus XXIII:19, Exodus XXXIV:26, Deuteronomy XIV:21)

This passage appears three times in the Torah and is therefore considered a very serious admonition. As a result, the law cannot be violated even for nonfood uses such as pet food. Neither can one derive benefit from such a mixture; therefore, one cannot own a cheeseburger business. The meat side of the equation has been rabbinically extended to include poultry (not fish), as both meat and poultry need to be inspected, deveined, salted, and soaked. The dairy side includes all milk derivatives.

Keeping meat and milk separate in accordance with kosher law requires that the processing and handling of all materials and products fall into one of three categories:

- a. A meat product
- b. A dairy product
- c. A neutral product called “pareve,” “parve,” or “parev.” (For words that are transliterations of Hebrew—like “pareve”—multiple English spellings are acceptable.)

The pareve category includes all products that are not classified

Nonglatt meat and nonmenhadrin poultry products encompass a larger percentage of the kosher marketplace (by volume)

The salt used for koshering must be of a crystal size that is large enough that the crystals will not dissolve within the hour and must be small enough to permit complete coverage of the meat

religiously as meat or dairy. Secular classifications may be defined differently. All plant products are pareve, along with eggs, fish, honey, and lac resin (shellac). These pareve foods can be used with either meat products or dairy products. However, if they are mixed with meat or dairy they take on the identity of the product they are mixed with; for example, an egg in a cheese soufflé becomes dairy.

A special set of rules applies to fish. Fish can be eaten at the same meal at which meat is eaten, but it cannot be mixed directly with the meat. The dishes used with the fish are generally kept separate and rinsed before they are used with meat, or vice versa. The original law in the Talmud speaks of a specific concern that one particular type of fish caused people to get sick when they mixed that fish with meat. Since we do not know what fish that was and have no modern evidence that such a problem exists, this rabbinical health concern is no longer valid or necessary according to the Conservative Jewish movement. This is a very specific exception to the generalization that kosher laws are not health laws. Another exception with respect to handling fish: One of the very traditional Chassidic Orthodox groups—Lubavitch or Chabad—also has a tradition of not mixing milk with fish; for example, not permitting a fish gelatin to be used in yogurt.

To assure the complete separation of milk and meat, all equipment, utensils, pipes, steam, and so on must be of the properly designated category. If plant materials, like fruit juices, are run through a dairy plant, they would be considered under kosher law. Some kosher supervision agencies would permit such a product to be listed as “dairy equipment (D.E.)” rather than “dairy.” The D.E. tells the consumer that it does not contain any intentionally added dairy ingredients, but that it was made on dairy equipment. (See the section on “Kosher and Allergies”). If a product with no meat ingredients is made in a meat plant, like a vegetarian vegetable soup, it may be marked “meat equipment (M.E.)” Although one may need to “wash” the dishes before and after use, the D.E. food can be eaten on meat dishes and the M.E. food on dairy dishes. A significant wait is normally required to use a product with dairy ingredients after one has eaten meat. This can range from 3 to 6 h, depending on the customs (“minhag”) of the area from which the husband of each family came. With the D.E. listing, the consumer can use the D.E. product immediately before or after a meat meal, but not with a meat meal. Following dairy, the wait before eating meat is much less, usually from a “rinse of the mouth” with water to 1 h. Certain dairy foods do require the full wait of 3 to 6 h; that is, when a hard cheese is eaten, the wait is the same as that for meat to dairy. A hard cheese is defined as a cheese that has been aged for more than 6 mo or one that is particularly dry and hard like many of the Italian cheeses. Thus, most companies producing cheese for the kosher market usually age their cheese for less than 6 mo, although with proper package marking this is not a religious requirement.

If one wants to make an ingredient or product truly pareve, the plant equipment must undergo a process of equipment kosherization (see section on Equipment Kosherization). From a marketing standpoint, a pareve designation is most desirable since it has the most uses, both for the kosher and for the nonkosher consumer.

Kosher: special foods

Grape products. To be kosher, all grape juice-based products

can only be handled by Sabbath-observing Jews from grape-pressing to final processing. In manufacturing kosher grape juice, then, harvesting cannot occur on Saturday and only Jewish workers can press the grapes. If the juice is pasteurized (heated, or “mevushal” in Hebrew), then it can be handled by any worker as an ordinary kosher ingredient.

The actual pasteurization temperature is debated, and different rabbinical groups use different temperatures. Some wineries do not pasteurize the product, preferring to hire only Jews to handle the wine, which then does not require heating. The traditional Jewish religious wines that are still often used for religious ceremonies were historically very sweet, often made from Concord grapes.

If a liquid bottling line, a soda line for example, uses a product with nonkosher grape juice, the line would have to be cleaned (rinsed) out before proceeding to make kosher products. The normal scheduling of light to dark products in the course of the day, which is done so that the carryover from one product to the next is not observed by consumers, may need to be adjusted so that all grape juice-containing products are run at the end of the day.

One controversial issue has been the status of marc alcohol. After the grapes are pressed, hot water containing cane or beet sugar is added and a second press juice obtained. This is then fermented and a commercial (marc) alcohol obtained, whose kosher status remains controversial.

Jewish cheese (“Gevinas Yisroel”)

Similar to the laws concerning kosher wine production, most kosher supervision organizations require the supervising rabbi to add the coagulating agent (for example, the agent that makes the cheese form a curd) into the vat to ensure that the cheese is kosher. Any cheese that does not meet this requirement is unacceptable.

Kosher whey can be created more easily. If all the ingredients and equipment used during cheesemaking are kosher, the whey will be kosher as long as the curds and whey have not been heated above 120 °F (49 °C) before the whey is drained off. This is true even if a rabbi has not added the coagulant. The necessity for Jewish participation in cheesemaking is that the cheese is a product “fit for a king.” Clearly, whey does not fit into this category. There is much more kosher whey available in the U.S. than kosher cheese.

Increasingly, the dairy industry is seeking to sell more whey to other food companies. Since many of these companies are kosher, there has been growing interest in assuring the kosher status of whey. For example, several manufacturers of Swiss cheese, which has one of the most desirable, whitest wheys, have reduced the temperature at which they work the curds under the whey. Instead of using the traditional 125 to 127 °F (52 to 53 °C), they are using a temperature under 120 °F (49 °C) to work the curds and to obtain a kosher whey.

But there are challenges to be overcome. Much of the whey is produced in spray driers, which are among the most difficult pieces of equipment to kosherize. The process of cleaning out the entire system is quite time consuming. Some spray driers also have

All plant products are pareve, along with eggs, fish, honey, and lac resin (shellac). These pareve foods can be used with either meat products or dairy products

If one wants to make a product pareve, the plant equipment must undergo a process of kosherization. From a marketing standpoint, a pareve designation is most desirable since it has the most uses, both for the kosher and for the nonkosher consumer

an automatic shut-off device that does not permit hot water at 190 °F (88 °C) or hotter to be run through the system.

Another problem deals with whey cream. Any cream that is separated from cheese at above 120 °F (49 °C) is subject to the restrictions that come with cheese and is generally not considered kosher. This cream has recently been used to produce butter, which is therefore not considered kosher. Most rabbis had traditionally accepted butter as kosher without supervision as is still the case with milk. The transition to requiring kosher supervision of butter has been difficult. A more detailed article on this and other closely related kosher dairy issues has been published (Regenstein and Regenstein, 2002a,b,c).

“Cholev Yisroel”

Some kosher-observant Jews are concerned about possible adulteration of milk with the milk of non-kosher animals, such as mare’s milk or camel’s milk, and therefore require that the milk be watched from the time of milking. This “Cholev Yisroel” milk is required by some of the stricter kosher supervision agencies for all dairy ingredients. Rabbis who accept non-Cholev Yisroel milk in the U.S. do so for two reasons. First, they believe that the laws in the U.S. and many other countries are strong enough to assure that adulteration does not occur. Second, the nonkosher milks are worth more money than kosher milks, so there is no incentive to add nonkosher milk to the milk of kosher species.

Farms producing Cholev Yisroel milk would have a Sabbath-observing Jew on the farm whenever milking is taking place, including the Sabbath. The milk tanks on the farm and the tank truck taking the milk to market would both be sealed by the on-site religious supervisor, and then the seal would be broken by the receiving religious supervisor at the milk plant.

“Yashon” and “Chodesh” flour

On the second day of Passover, Jews traditionally brought a grain offering to the Temple in Jerusalem. This served to bless all of the flour that was growing or had already been harvested on that day. Such flour has attained the status of “yashon” (old) flour. All wheat for flour that has not started to grow by the second day of Passover is considered “chodesh” (new) and should not be used until the next Passover. For all intents and purposes, the new grain would have been planted more than 14 days before the second day of Passover, the minimum time assumed necessary for the seeds to germinate. All winter wheat from the Northern Hemisphere is automatically considered yashon. It is more difficult to assure the yashon status of spring wheat, which generally is harvested in August. Manufacturers may receive inquiries from consumers about the source and timing of their wheat and other grain purchases, particularly between August and the next Passover.

Early fruit

Another kosher law concerning plants is the requirement that tree fruits not be harvested for benefit until the fourth year. This has been particularly problematic with respect to papaya, a tree fruit that is often grown commercially for less than four years. Discussion and disagreement remain at this time.

Passover

The Passover holiday occurs in spring and requires observant Jews to avoid eating the usual products made from five prohibited

grains: wheat, rye, oats, barley, and spelt (Hebrew: “chometz”). Those observing kosher laws can only eat the specially supervised unleavened bread from wheat (Hebrew: “matzo”) that is prepared especially for the holiday. Once again, some matzos—that is, “schmura” matzos—are made to a stricter standard with rabbinical inspection beginning in the field. For other Passover matzo, the supervision does not start until the wheat is about to be milled into flour. Matzos made from oats and spelt are now available for consumers with allergies.

Special care is taken to assure that matzo does not have any time or opportunity to “rise.” In some cases, this literally means that products are made in cycles of less than 18 min. This is likely to be the case for handmade schmura matzo. In continuous large-scale operations, the equipment is constantly vibrating so that there is no opportunity for the dough to rise.

Why 18 min? Note that the word for “life” is the two-letter Hebrew word “Chai.” Since the Hebrew alphabet is “mapped” to numbers (for example, Aleph = 1, Bet = 2), the word “Chai” equals the number 18. Thus, fermentation or “life” is considered to require 18 min to occur. Anything made in less than 18 min has not fermented and has, therefore, not violated the prohibitions of Passover. The drinking toast among Jews is “L’Chaim,” or “To life.”

In the Middle Ages, the rabbis of Europe also made products derived from corn, rice, legumes, mustard seed, buckwheat, and some other plants (Hebrew: “kitnyos”) prohibited for Passover. In addition to the actual “flours” of these materials, many contemporary rabbis also prohibit derivatives such as corn syrup, cornstarch, and cornstarch derivatives such as citric acid. A small number of rabbis permit the oil from kitnyos materials, or liquid kitnyos products and their derivatives such as corn syrup. The major source of sweeteners and starches used for production of “sweet” Passover items are either real sugar or potato-derived products such as potato syrup.

Rabbis are concerned with other foodstuffs that are being raised in areas where wheat and other Passover grains is grown. Because of possible cross-contamination, some crops such as fennel and fenugreek are also prohibited for Passover.

During the Dark Ages, Jewish communities within Christian countries did not have regular contact with Jews living in Muslim countries. The laws governing these two communities began to drift apart. As a result, today’s European, or Ashkenazic, Jewish community has significantly different laws and customs from the Sephardic Jewish community, which included Spain, North Africa, and the Middle East. Sephardic custom, which is the default in Israel, includes among other rules no ban on all or some of the kitnyos materials like rice, a “beit yosef” meat standard of absolutely no lung adhesions on animals, and a willingness to use hindquarter that has been correctly subject to nikkur or deveining. With a few exceptions, however, Passover foods in the U.S. are processed to Ashkenazic standards.

Passover is a time of large family gatherings. The requirement for two separate sets of dishes specifically for Passover, one meat and one dairy set, adds another element of resource and activity to providing hospitality. In previous generations, some kosher consumers limited themselves to meat products for the entire week.

Overall, 40% of kosher sales for the traditional “kosher” compa-

The necessity for Jewish participation in cheesemaking is that the cheese is a product “fit for a king.” Clearly, whey does not fit into this category

Manufacturers may receive inquiries from consumers about the source and timing of their wheat and other grain purchases, particularly between August and the next Passover

nies such as Manischewitz, Rokeach, and Kedem occur for the week of Passover. Stores generally begin to make Passover products available to consumers between 4 and 6 wk prior to Passover. Consumers who regularly use products such as dietary supplements and nonlife-threatening drugs will be concerned about obtaining a version of their favorite and/or required product that is acceptable at Passover. For drugs, the prohibition of chometz is of special concern since many Jews do not want any manner of chometz in their home, including drugs, pet foods, and nonfood items such as rubbing alcohol.

A violation of the laws of Passover is considered Biblical grounds for being “separated from the community.” This is generally the highest level of prohibition and has led to extra strictness with respect to Passover.

The most stringent kosher consumers only eat “whole” unbroken matzos on the first seven days of Passover—the seven days observed by Jews everywhere, including Israel. Thus, any prepared food for those seven days (the Biblically commanded time) may need to be made without the use of any matzo meal or matzo flour; that is, no “gebrucks” (no broken matzos). However, on the 8th day—which is a rabbinical extension of Passover outside of the land of Israel—these people will also eat products made with less than whole matzos, including the traditional Jewish matzo ball soup.

With all the limitations of Passover, it is a challenge to make Passover food products that are tasty and have a decent texture. The kosher community welcomes the assistance of the food scientist and the food industry to develop more and better Passover products

For drugs, the prohibition of chometz is of special concern since many Jews do not want any manner of chometz in their home, including drugs, pet foods, and nonfood items such as rubbing alcohol

Kosher: Other Processing Issues

Equipment kosherization

There are three ways to make equipment kosher or to change its status back to pareve from dairy or meat. Rabbis generally frown on going from meat to dairy or vice versa. Most conversions are from dairy to pareve or from treife to one of the categories of kosher. There are a range of process procedures to be considered, depending on the equipments’ prior production history.

After a plant, or a processing line, has been used to produce kosher pareve products, it can be switched to either kosher dairy or kosher meat without a special equipment kosherization step. It can also subsequently be used for halal production (from pareve or dairy lines, not always from meat lines), and then, finally, for nonkosher products. In many cases, a mashgiach—that is, the rabbinically approved kosher supervisor—is needed on site for equipment kosherization, so it normally is beneficial to minimize the number of changeovers from one status to another.

The simplest equipment kosherization occurs with equipment that has only been handled cold. This requires a good liquid caustic/soap cleaning; for example, the type of cleaning done normally in most food plants. Some plants do not normally do a wet clean-up between runs (a dry powder packing plant or a chocolate line, for example), and these would need to seek specific rabbinical guidance for the changeover. Materials such as ceramics, rubber, earthenware, and porcelain cannot be koshered because

they are considered not “capable” of releasing the flavors trapped within them during the equipment kosherization process. If these materials are found in a processing plant, new materials may be required for production.

Most food processing equipment is operated at cooking temperatures generally above 120 °F (49 °C), the temperature that is rabbinically defined as “cooking.” However, the exact temperature for “cooking” depends on the individual rabbi, in that it is the temperature at which he must immediately remove his hand when he puts it into hot water. Recently, through an agreement by the major four mainstream American kosher certifying agencies, most normative kosher supervision agencies in the U.S. have settled on 120 °F (49 °C) as the temperature at which foods are cooked, and this figure is used throughout this paper. (See the section on “Dealing with Kosher and Halal Supervision Agencies.”)

Equipment that has been used with cooked product must be thoroughly cleaned with liquid caustic/soap before being kosherized. The equipment must then be left idle for 24 h, after which it is “flooded” with boiling water being defined as water between 190 °F (88 °C) and 212 °F (100 °C), in the presence of a kosher supervisor. The details depend on the equipment being kosherized. In some cases, particularly foodservice establishments, a “pogem” (bitting agent, oftentimes ammonia) is used in the boiling water in lieu of the 24-h wait. The absolutely clean equipment (silverware, for example) is put into the ammonia containing boiling water to pick up a “bad” flavor. This bad flavor is removed by a second boiling with clean water. The 24-h wait accomplishes the same thing as the ammonia; for example, it turns any good flavors attached to the equipment into bad flavors.

The principles concerning koshering by “hagalah” (boiling water) or “irui” (boiling water poured over a surface) are based on an ancient understanding of the movement of “taam” (flavor) in and out of solid materials. The concepts of taam and its movement between products are also used to analyze the many possible combinations of kosher meat, kosher dairy, and/or nonkosher products interacting accidentally; that is, for analysis “after the fact” (“b’de-eved”). For real accidents, the rabbis are able to be more lenient than they might be for things that are done intentionally (“l’chatchilla,” or planned ahead of time). In modern times, where kosher supervision in the U.S. is active; that is, the rabbis are operating with a contractual agreement and ongoing inspections, there is less room to work with some of these leniencies. In Europe, where rabbis sometimes only make informal visits to plants and report on their visits to their congregants and the greater Jewish community, the rules with respect to “after the fact” issues are sometimes used more freely—since the rabbi cannot control, nor is he responsible for, any changes the processing plant may make once he has left the plant.

In the case of ovens or other equipment that use “fire,” or dry heat, kosherization involves heating the metal until it glows. Again, the supervising rabbi is generally present while this process is taking place. In the case of ovens, particularly large commercial ovens, issues relating to “odor/vapors” and “steam” must also be considered. Sometimes the same oven can be used sequentially for alternating pareve and dairy baking. Those details are beyond the scope of this paper and require a sophisticated

Materials such as ceramics, rubber, earthenware, and porcelain cannot be koshered because they are considered not “capable” of releasing the flavors trapped within them

rabbinical analysis to determine which ovens can be used for more than one status without requiring kosherization.

The procedures that must be followed for equipment kosherization, especially for hot equipment, can be quite extensive and time consuming, so the fewer status conversions, the better. Careful formulation of products and good production planning can minimize the inconvenience. If a conversion is needed, it is often scheduled for early Monday morning before the production week starts. Since rabbis observe the Sabbath on Saturday, they are available to travel to food plants all around the country on Sunday to start work on Monday morning at 3, 4, or 5 a.m.

Jewish cooking and Jewish baking

In cases where it is necessary for rabbis to “do” the cooking (“Bishul Yisroel”), their contribution must remain independent of the company’s activities. Often this means turning on the pilot light. As long as the pilot light remains lit, the rabbi does not have to be present; if it goes out, he must return. With electrical equipment and appliances, it is possible to keep electricity on all the time, using the lowest setting when actual heating is not taking place. The most difficult situation for kosher operations is a gas stove with an electrical starter. Care in selecting equipment can prevent a number of problems.

Baking generally requires Jewish participation, “Pas Yisroel”; that is, the Jew must start the ovens. In addition, if the owner of the bakery is Jewish, there may be a requirement for “taking challah,” a portion of the dough that is removed and needs to be specially handled. Again, the details need to be worked out with the supervising rabbi.

Note that a company that is over 50% Jewish management or Jewish ownership is subject to stricter rules; for example, the taking of challah and the need to observe the Sabbath and other Jewish holidays. To be accountable for less strict rules, some owners sell their business to a Gentile for the period of concern, even a single day each week. This is a legally binding contract and, in theory, the Gentile owner can renege on his or her informal agreement to legally sell it back at the end of “shabbos” or the end of the holiday. On Passover, the need to do this can be more critical: Any chometz in the possession of a Jew during Passover is forever prohibited in a kosher home; that is, if a Jewish grocery store receives a shipment of bread during Passover, that bread, even if marked as kosher although obviously non-Passover, can never be used by an observant kosher-observing Jew.

“Toveling” (immersing equipment purchased from a Gentile)

When a Jewish company purchases or takes new or used equipment from Gentiles, the equipment must be bathed in ritual bath (“mikvah”) prior to being equipment-kosherized. Equipment from metal and glass requires a blessing, complex items that contain glass or metal may need to be toveled but may not need a blessing. A mashgiach needs to be present for this activity. A natural body of water can be used instead of the indoor mikvah, especially with large equipment.

Tithing and other Israeli agricultural laws

In ancient times, products from Israel were subject to special

rules concerning tithing for the priests, their helpers, the poor, and so on. These are complex laws that only affect products from Israel. There is a rabbinical process for doing the tithing that does not require some of the actual product to be removed from the lot. The land of Israel is also subject to the Sabbath (sabbatical) years; that is, crops from certain years cannot be used. These additional requirements challenge kosher consumers in the U.S. who are interested in purchasing and trying Israeli products. Rabbis in Israel arrange for companies to tithe when the products are destined for sale in Israel, but rarely for exports. In 2002, at least one major U.S. kosher supervision agency began to arrange for tithing before the product is offered to the consumer in the U.S. The details of this process are beyond the scope of this paper.

Kosher and allergies

Many consumers use kosher markings as a guideline to determine whether food products might meet their special needs, including allergies. There are, however, limitations that the particularly sensitive allergic consumer needs to keep in mind:

1. When equipment is kosherized—or converted from one status to another—the procedure may not yield 100% removal of previous materials run on the equipment. This became an issue some years ago when rabbis discovered that the special procedures being used to convert a dairy chocolate line to a pareve chocolate line led to enough dairy contamination that consumers who were very sensitive to dairy allergens were having problems. These lines are koshered without water—either a hot oil or “pareve” chocolate is run through the line in a quantity sufficient to remove any “dairy” residual as calculated by the supervising rabbi.

Neither Islam nor Judaism permit practices that will endanger life to occur. As a result, rabbis decided that none of the current religiously acceptable methods for equipment kosherization of chocolate are effective enough to move between dairy and pareve production, therefore mainstream kosher supervision agencies no longer permit this conversion.

2. Kosher law does permit certain *ex post facto* (after the fact) errors to be negated. Trace amounts of materials accidentally added to a food can be nullified if the amount of “offending” material is less than $\frac{1}{60}$ by volume under very specific conditions—that is, truly added by accident. However, some items can never be negated—for example, strong flavor compounds that make a significant impact on the product even at less than $\frac{1}{60}$. In deference to their industrial client company’s desire to minimize negative public-

ity, many kosher supervision agencies do not announce when they have used this procedure to make a product acceptable. When there is a concern about allergic reactions, however, many rabbis are more willing to alert the public as soon as possible for health and safety reasons.

Products that might be made in a dairy plant—for example, pareve substitutes for dairy products and some other liquids like teas and fruit juices—may be produced in plants that have been kosherized, but may not meet a very critical allergy standard. Care in consuming such products is recommended.

3. Labels that say Dairy and Meat Equipment: There are no in-

The procedures that must be followed for equipment kosherization, especially for hot equipment, can be quite extensive and time consuming, so the fewer status conversions, the better

Many consumers use kosher markings to determine whether products might meet their needs, including allergies. There are, however, limitations that the particularly sensitive allergic consumer needs to keep in mind

tionally added dairy or meat ingredients, but the product is produced on a dairy or meat line without any equipment kosherization. The product is considered pareve with some use restrictions in a kosher home. Again, the more sensitive the allergy, the more caution is advised.

4. In a few instances where pareve or dairy products contain small amounts of fish, such as anchovies in Worcestershire sauce, this ingredient may be marked as part of the kosher supervision symbol. Many certifications do not specifically mark this if the fish in the initial material is less than 1/60. Someone who is allergic should always read the ingredient label.

5. At Passover, there is some dispute about “derivatives” of kitnyos materials, the nongrain materials that are also prohibited for Ashkenazic Jews. A few rabbis permit items like corn syrup, soybean oil, peanut oil, and similarly derived materials from these extensions. The proteinaceous part of these materials is generally not used. Consumers with allergies to these items can therefore purchase these special Passover products from supervision agencies that do not permit kitnyos derivatives. With respect to equipment kosherization, supervising rabbis tend to be very strict about the clean-up of the prohibited grains (wheat, rye, oats, barley, and spelt), so these Passover products come closest to meeting potential allergy concerns. This may not be the case, however, with respect to the extended kitnyos prohibitions.

Consumers should not assume that kosher markings ensure the absence of trace amounts of the ingredient to which they are allergic. It is a useful first screen, but products should be carefully tested before assuming everything is acceptable. For example, the allergic person should eat a small portion of the product, and increase the amount consumed slowly, over time, to assure no adverse reaction. People with allergies should get into the habit of checking lot numbers on products and purchasing stable goods with a single lot number in sufficient quantity to meet anticipated needs within the shelf-life expectations of the goods. Every packaged product has a lot number, representing some unit of production. Some companies change lot numbers a few times a day, while others change it once a day. In any case, the same lot number represents a production run that can usually be expected to be more consistent than runs produced at different times with different lot numbers.

How thoroughly are dairy ingredients kept out of a pareve line? The current standard for kosher may not meet the needs of allergic consumers since the dairy powder dust in the air may be sufficient to cause allergy problems. A company might choose to use a special marking on kosher pareve chocolates produced in plants that also produce dairy products to indicate that these are religiously pareve, but may not be sufficiently devoid of dairy allergens for very allergic consumers. Furthermore, they may also want to consider checking the chocolate using one of the modern antibody or similar types of tests. For example, regular M&Ms are marked as containing “peanuts” to alert people who are very allergic to peanuts. The product does not contain peanuts, but common equipment (cleaned between product runs) is used for both products, and peanut dust may be in the air.

Halal

Halal dietary laws

The halal dietary laws define food products as “halal” (permitted)

or “haram” (prohibited). A few items go into the category of “makrooh” (questionable to detestable). The law deals with the following five issues; all but the last are in the animal kingdom.

- a. Prohibited animals
- b. Prohibition of blood
- c. Method of slaughtering/bleeding
- d. Prohibition of carrion
- e. Prohibition of intoxicants.

The Islamic dietary laws are derived from the Quran, a revealed book; the Hadith, the traditions of Prophet Muhammad; and through extrapolation of and deduction from the Quran and the Hadith, by Muslim jurists.

Approximately 90% of Muslims are Sunni, while the other 10% are Shii'a. This document will generally follow Sunni practice. There are 11 generally accepted principles pertaining to halal and haram in Islam for providing guidance to Muslims in their customary practices:

1. The basic principle is that all things created by Allah are permitted, with a few exceptions that are prohibited. Those exceptions include pork, blood, meat of animals that died of causes other than proper slaughtering, food that has been dedicated or immolated to someone other than Allah, alcohol, intoxicants, and inappropriately used drugs.

2. To make lawful and unlawful is the right of Allah alone. No human being, no matter how pious or powerful, may take it into his hands to change it.

3. Prohibiting what is permitted and permitting what is prohibited is similar to ascribing partners to Allah. This is a sin of the highest degree that makes one fall out of the sphere of Islam.

4. The basic reasons for the prohibition of things are due to impurity and harmfulness.

A Muslim is not supposed to question exactly why or how something is unclean or harmful in what Allah has prohibited. There might be obvious reasons and there might be obscure reasons. The following rationales might be considered:

- Carrion and dead animals are unfit for human consumption because the decaying process leads to the formation of chemicals harmful to humans.

- Blood that is drained from an animal contains harmful bacteria, products of metabolism, and toxins.

- Swine serves as a vector for pathogenic worms to enter the human body. Infections by *Trichinella spiralis* and *Traenia solium* are not uncommon.

- Intoxicants are considered harmful for the nervous system, affecting the senses and human judgment, leading to social and family problems and in some cases even death.

- Immolating food to someone other than Allah may imply that there is somebody as important as Allah, that there could be two Gods. This would be against the first tenet of Islam: “THERE IS BUT ONE GOD.”

These reasons and explanations, and many more such as these, may be acceptable as sounded, but the underlying principle behind the prohibitions remains the Divine order: “FORBIDDEN UNTO YOU ARE . . .”

5. What is permitted is sufficient and what is prohibited is then superfluous. Allah prohibited only things that are unnecessary or dispensable while providing better alternatives. People can sur-

Consumers should not assume that kosher markings ensure the absence of trace amounts of the ingredient to which they are allergic

A Muslim is not supposed to question exactly why or how something is unclean or harmful in what Allah has prohibited. There might be obvious reasons and there might be obscure reasons

vive and live better without consuming unhealthful carrion, unhealthful pork, unhealthful blood, and the root of many vices—alcohol.

6. Whatever is conducive to the “prohibited” is in itself prohibited. If something is prohibited, anything leading to it is also prohibited.

7. Falsely representing unlawful as lawful is prohibited. It is unlawful to make flimsy excuses or to consume something that is prohibited, such as drinking alcohol for supposedly medical reasons.

8. Good intentions do not make the unlawful acceptable. Whenever any permissible action of the believer is accompanied by a good intention, his action becomes an act of worship. In the case of haram, it remains haram no matter how good the intention or how honorable the purpose may be. Islam does not endorse employing a haram means to achieve a praiseworthy end. The religion indeed insists not only that the goal be honorable, but also that the means chosen to achieve it be lawful and proper. Islamic laws demand that the right should be secured solely through just means.

9. Doubtful things should be avoided. There is a gray area between clearly lawful and clearly unlawful. This is the area of “what is doubtful.” Islam considers it an act of piety for the Muslims to avoid doubtful things, for them to stay clear of the unlawful. Prophet Muhammad said:

“The halal is clear and the haram is clear. Between the two there are doubtful matters concerning which people do not know whether they are halal or haram. One who avoids them in order to safeguard his religion and his honor is safe, while if someone engages in a part of them, he may be doing something haram . . .”

10. Unlawful things are prohibited to everyone alike. Islamic laws are universally applicable to all races, creeds, and sexes. There is no favored treatment of privileged class. Actually, in Islam, there are no privileged classes; hence, the question of preferential treatment does not arise. This principle applies not only among Muslims, but between Muslims and non-Muslims as well.

11. Necessity dictates exceptions. The range of prohibited things in Islam is quite limited, but emphasis on observing the prohibitions is very strong. At the same time, Islam is not oblivious to the exigencies of life, to their magnitude, or to human weakness and the capacity to face them. A Muslim is permitted, under the compulsion of necessity, to eat a prohibited food to ensure survival—but only in quantities sufficient to remove the necessity and avoid starvation.

Prohibited and permitted animals

The meat of pigs, boars, and swine is strictly prohibited, as are the carnivorous animals such as lions, tigers, cheetahs, cats, dogs, and wolves. Also prohibited are birds of prey such as eagles, falcons, osprey, kites, and vultures.

The meat of domesticated animals like ruminants with split hooves (cattle, sheep, goat, or lamb, for example) is allowed for food, as are camels and buffaloes. Also permitted are the birds that do not use their claws to hold down food, such as chickens, turkeys, ducks, geese, pigeons, doves, partridges, quails, sparrows, emus, and ostriches. Some of the animals and birds are permitted only under special circumstances or with certain conditions. Horsemeat may be allowed to be consumed under some

distressing conditions, discussion of which is beyond the scope of this paper. The animals fed unclean or filthy feed; for example, formulated with biosolids (sewage) or protein from tankage, must be quarantined and placed on clean feed for a period varying from 3 to 40 days before slaughter to cleanse their systems.

Food from the sea—namely, fish and seafood—are the most controversial among various denominations of Muslims. Certain groups, particularly Shia, only accept fish with scales as halal, while others consider as halal everything that lives in the water all the time. Consequently, prawns, lobsters, crabs, and clams are halal, but may be detested (Makrooh) by some, and hence not consumed. Animals that live both in water and on land (amphibians) such as frogs, turtles, crocodiles, and seals are also not consumed by the majority of observant Muslims.

There is no clear status of insects established in Islam, except that locust is specifically mentioned as halal. Insects are generally considered neutral. However, from deduction of the laws, it seems that both helpful insects like bees, ants, and spiders, and harmful or dirty creatures like lice, flies, and mosquitoes, are all prohibited as food. Among the byproducts from insects, use of honey was very highly recommended by Prophet Muhammad. Other products like royal jelly, wax, shellac, and carmine are acceptable to be used without restrictions by most; however, some may consider shellac and carmine Makrooh or offensive to their psyche.

Eggs and milk from permitted animals are also permitted for Muslim consumption. Milk from cows, goats, sheep, and buffaloes is halal. Unlike kosher, there is no restriction on mixing meat and milk.

Prohibition of blood

According to the Quranic verses, blood that pours forth is prohibited for consumption. It includes blood of permitted and non-permitted animals alike. Liquid blood is generally not offered for sale or consumed by Muslims or non-Muslims, but products made with and from blood are available. There is general agreement among Muslim scholars that anything made from blood is unacceptable. Products like blood sausage and ingredients like blood albumin are either haram or questionable at best, and should be avoided for product formulations.

Slaughtering of permitted animals

There are special requirements for slaughtering the animal:

- An animal must be of a halal species
- It must be slaughtered by an adult and sane (mentally competent) Muslim
- Allah must be invoked by name at the time of slaughter
- Slaughter must be done by cutting the throat in a manner that induces rapid and complete bleeding, resulting in the quickest death. The generally accepted method is to cut at least 3 of the 4

Products like royal jelly, wax, shellac, and carmine are acceptable to be used without restrictions by most; however, some may consider shellac and carmine “Makroohs”

Food from the sea—namely, fish and seafood—are the most controversial among various denominations of Muslims

Anything made from blood is unacceptable. Products like blood sausage and ingredients like blood albumin are either “haram” or questionable at best

passages (that is, the carotids, jugulars, trachea, and esophagus). Some Islamic scholars do accept machine slaughter, particularly of poultry. In recent years, however, the trend has gone back towards requiring hand slaughter of these animals.

The meat of animals thus slaughtered is called “zabiha” (or “dhabiha”) meat. “Verily Allah has prescribed proficiency in all things. Thus, if you kill, kill well; and if you perform dhabiha, perform it well. Let each one of you sharpen his blade and let him spare suffering to the animal he slays.” (Khan 1991)

Islam places great emphasis on gentle and humane treatment of animals, especially before and during slaughter. Some of the conditions include giving the animal proper rest and water, avoiding conditions that create stress, not sharpening the knife in front of the animals, using a very sharp knife to slit the throat, and so on. Only after the blood is allowed to drain completely from the animal and the animal has become lifeless can the dismemberment (cutting off of horns, ears, legs, and so on) commence. Unlike kosher, soaking and salting of the carcass is not required for halal; halal meat is therefore treated like other commercial meat. Animal-derived food ingredients like emulsifiers, tallow, and enzymes must be made from animals slaughtered by a Muslim to be halal.

Hunting of permitted wild animals (like deer) and birds (like doves, pheasants, and quail) is permitted for the purpose of eating, but not merely for deriving pleasure out of killing an animal. Hunting during the pilgrimage to Makkah (Mecca) and within the defined boundaries of the holy city of Makkah is strictly prohibited. Hunting is permitted with any tools, such as guns, arrows, spears, or traps. Trained dogs may also be used for catching or retrieving the prey. The name of Allah may be pronounced at the time of releasing the tool rather than catching of the prey. The hunted animal must be bled by slitting the throat as soon as it is caught. If the blessing is made at the time of pulling the trigger or shooting an arrow and the hunted animal dies before the hunter reaches it, it would still be halal as long as slaughter is performed and some blood comes out. Fish and seafood may be hunted or caught by any reasonable means available as long as it is done humanely, and no blessing needs to be said.

The requirements of proper slaughtering and bleeding are applicable to land animals and birds. Fish and other creatures that live in water need not be ritually slaughtered. Similarly, there is no special method of killing the locust.

The meat of the animals that die of natural causes (diseases, for example, or being gored by other animals, being strangled, falling from a height, beating, or killed by wild beasts) is unlawful to be eaten, unless one saves such animals by slaughtering before they actually become lifeless. Fish that dies naturally and is floating on water or lying out of water is still halal as long as it does not show any signs of decay or deterioration.

Meat of animals killed by the “Ahl-al-Kitab”

There has been much discussion and controversy among Muslim consumers, as well as Islamic scholars, about the permissibility of consuming the meat of animals killed by the “Ahl-al-Kitab” or “people of the book,” meaning, among certain other faith communities, Jews and Christians. The issue focuses on whether meat prepared in the manner practiced by either faith would be permitted for Muslims.

In the Holy Quran, this issue is presented only once in Sura V,

verse 5, in the following words:

“This day all good things are made lawful for you. The food of those who have received the Scripture is lawful for you, and your food is lawful for them.”

This verse addresses the Muslims and seems to establish a social context where Muslims, Jews, and Christians could interact with each other. It points toward two sides of the issue—first, “the food of the people of the book is lawful for you” and second, “your food is lawful for them.”

In most discussions, scholars try to deal with the first part (food of Ahl-al-Kitab) and ignore the second part (food of Muslims) altogether, leaving that decision to the people of the book.

As far as the first part of the ruling is concerned, Muslims are allowed to eat the food of the Jews and Christians as long as it does not violate the first part of this verse, “this day all good and wholesome things have been made lawful for you.” Quran V:6.

The majority of Islamic scholars are of the opinion that the food of the Ahl-al-Kitab must meet the criteria established for halal and wholesome food, including proper slaughter of animals. They believe that the following verse establishes a strict requirement for Muslims:

“And eat not of that whereupon Allah’s name hath not been mentioned, for lo! It is abomination.” [Quran VI:121]

However, some Islamic scholars are of the opinion that the above verse does not apply to the food of Ahl-al-Kitab and there is no need to mention the name of Allah at the time of slaughtering (Al-Qaradawi 1984). It is up to the regulatory agencies in the halal food importing countries, halal certifiers for export or domestic consumption, or the individual Muslim consumers to decide how to interpret these verses. However, for clarity in understanding the modern day practices of Ahl-al-Kitab, we would like to offer the following analysis:

1. Christians do not follow a strict food code
2. Jews are divided into 3 major groups:

- Orthodox Jews who slaughter animals (ruminants and poultry) in their prescribed manner and currently prepare all “kosher” meat currently marketed.

- Conservative Jews who follow the kosher guidelines based on Jewish law, but who tend to be more lenient than Orthodox Jews.

- Reform Jews who do not generally consider kosher laws an essential concern for modern Jewish practice.

3. Orthodox Jewish slaughterers say a blessing at the beginning of a slaughter session, but do not pronounce the name of God at the actual time of slaying of each animal.

For the Muslims who want to follow requirements of verse VI:121, meat (red meat and poultry) of the Ahl-al-Kitab may not meet halal standards. In addition, as discussed elsewhere in this paper, dairy and pareve kosher products may contain alcohol (for example, in flavors) and some more lenient kosher supervisions as defined above will permit products that contain animal-based ingredients that may also be unacceptable to the halal-observing consumer.

Prohibition of alcohol and intoxicants

Consumption of alcoholic drinks and other intoxicants is prohibited according to the Quran (V:90-91), as follows:

“O you who believe! Fermented drinks and games of chance, and idols and divining arrows are only an infamy of Satan’s hand-

**Unlike kosher,
soaking and salting
of the carcass is not
required for halal;
halal meat is
therefore treated
like other
commercial meat**

**Animal-derived food
ingredients like
emulsifiers, tallow,
and enzymes must
be made from
animals slaughtered
by a Muslim to be
halal**

work. Leave it aside in order that you may prosper. Only would Satan sow hatred and strife among you, by alcohol, and games of chance, and turn you aside from the remembrance of Allah, and from prayer: Will you not, therefore, abstain from them?"

The Arabic term used for alcohol in the Quran is "khamr," which means "that which has been fermented" and applies not only to alcoholic beverages like wine, beer, whiskey, and brandy, but has been taken to imply all things that intoxicate or affect one's thought process. Although there is no allowance for added alcohol in any beverage like soft drinks, small amounts of alcohol contributed from food ingredients may be considered an impurity and hence ignored. Synthetic or grain alcohol may be used in food processing for extraction, precipitation, dissolving, and other reasons, as long as the amount of alcohol remaining in the final product is very small, generally below 0.1%. Each importing country may have its own guidelines, which must be understood by the exporters and strictly adhered to.

In the West, food may be cooked in alcohol to enhance the flavor or to impart distinctive flavor notes. Wine is the most common form of alcohol used in cooking. While one may think that all of the added alcohol evaporates or burns off during cooking, the fact is that it does not. The alcohol retained in food products varies depending upon the cooking method. The following table gives some of the retained alcohol content of foods prepared by different cooking methods, as reported by the U.S. Dept. of Agriculture (Larsen, 1995):

Added to boiling liquid and removed from heat	85%
Cooked over a flame	75%
Added without heat and stored overnight	70%
Baked for 25 minutes without stirring	45%
Mixed, then baked or simmered for 15 min	40%
Mixed, then baked or simmered for 30 min	35%
Mixed, then baked or simmered for 1 h	25%
Mixed, then baked or simmered for 2 h	10%
Mixed, then baked or simmered for 2.5 h	5%

Even after cooking for 2.5 hours, up to 5% alcohol remains in the food. Although there is little chance of intoxication by eating such food, the use of alcoholic drinks in cooking is categorically prohibited.

Halal cooking, food processing, and sanitation

Alcohol may not be used in cooking. Otherwise, there are no restrictions about cooking in Islam, as long as the kitchen is free from haram foods and ingredients. There is no need to keep two sets of utensils, one for meat and the other for dairy, as in kosher.

In food companies, haram materials should be kept segregated from halal materials. The equipment used for nonhalal products has to be thoroughly cleansed using proper techniques of acids, bases, detergents, and hot water. As a general rule, kosher clean-

Synthetic or grain alcohol may be used in food processing for extraction, precipitation, dissolving, as long as the amount of alcohol remaining in the final product is very small

As a general rule, kosher cleaning procedures would be adequate for halal too

ing procedures would be adequate for halal too. If the equipment is used for haram products, it must be properly cleaned, sometimes by using an abrasive material, blessed by a Muslim inspector, and finally being rinsed with hot water seven times.

Both kosher and halal

Science

Gelatin. Important in many food products, gelatin is probably the most controversial of all modern kosher and halal ingredients. Gelatin can be derived from pork skin, beef bones, or beef skin. In recent years, some gelatins from fish skins have also entered the market. The first author is currently involved in research in this area. As a food ingredient, fish gelatin has many similarities to beef and pork gelatin; for example, it can have a similar range of bloom strengths and viscosities. Bloom is the number of grams of force needed to drive a specific probe under very specific conditions 4 mm into a gelatin gel. However, depending on the species from which the fish skins are obtained, its melting point can vary over a much wider range of melting points than beef or pork gelatin. This may offer some unique opportunities to the food industry, especially for ice cream, yogurt, dessert gels, confections, and imitation margarine. Fish gelatins can be produced kosher and halal with proper supervision, and is acceptable to almost all of the mainstream religious supervision organizations.

Most currently available gelatins—even if called "kosher"—are not acceptable to the mainstream U.S. kosher supervision organizations and to the Islamic scholars. Many are, in fact, totally unacceptable to halal consumers because they may be pork-based gelatin.

A recent development has been the manufacture of kosher gelatin from the hides of kosher-slaughtered cattle. It has been available in limited supply at great expense, and this gelatin has been accepted by the mainstream and even some of the stricter kosher supervision agencies. The plant produces gelatins of different bloom strength, and both soft and hard capsules of various sizes. This is an important new development that should be of interest to the nutraceutical and drug markets. Similarly, at least two major manufacturers are currently producing certified halal gelatin from cattle bones of animals that have been slaughtered by Muslims. Halal-certified hard- and soft-gelatin capsules are available at competitive prices. Vegetarian capsules are also available, made with starch, cellulose, or other vegetable ingredients.

One finds a wide range of attitudes towards gelatin among the lenient kosher supervision agencies. The most liberal view holds that gelatin, being made from bones and skin, is not being made from a food (flesh). Further, the process used to make the product goes through a stage where the product is so "unfit" that it is not edible by man or dog, and as such becomes a new entity. Rabbis holding this view may accept pork gelatin. Most water gelatin desserts with a generic "K" on the package follow this ruling.

Other rabbis only permit gelatin from beef bones and hides, and not pork. Still other rabbis only accept "India dry bones" as a source of beef gelatin. These bones, found naturally in India from the animals that fall and die in the fields, because of the Hindu custom of not killing cows, are aged for over a year and are "dry as wood"; additional religious laws exist for permitting these materials. Again, none of these products is accepted by the "mainstream" kosher or halal supervisions, and are therefore not ac-

Important in many food products, gelatin is probably the most controversial of all modern kosher and halal ingredients

cepted by a significant part of the kosher and halal community.

Biotechnology. Rabbis and Islamic scholars currently accept products made by simple genetic engineering; for example, chymosin (rennin) was accepted by the rabbis about half a year before it was accepted by the U.S. Food & Drug Admin. The basis for this decision involves the fact that the gene isolated from a nonkosher source is far below “visible.” Subsequently, it is copied many times “in vitro” and eventually injected into a host that is then reproduced many times. Thus, the original source of the “gene” is essentially totally lost by the time the food product appears. The production conditions in the fermenters must still be kosher or halal; that is, the ingredients and the fermenter, and any subsequent processing, must use kosher or halal equipment and ingredients of the appropriate status. A product produced in a dairy medium; for example, extracted from cow’s milk, would be

Rabbis and Islamic scholars currently accept products made by simple genetic engineering; for example, chymosin (rennin)

dairy. Mainstream rabbis may approve porcine lipase made through biotechnology when it becomes available, if all the other conditions are kosher. Islamic scholars are still considering the issue of products with a porcine gene; although a final ruling has not been established, the leaning seems to be towards rejecting such materials. If the gene for a porcine product were synthesized (that is, it did not come directly from the pig), Islamic scholars are prepared to accept it. Because the religious leaders of both communities have not yet determined the status of more complex genetic manipulations, such a discussion is therefore premature.

Pet food. Jews who observe the kosher laws can feed their domestic animals pet food that contains pork or other prohibited meats. They cannot feed their animals products that contain a mixture of milk and meat. On Passover, their pet food can contain kitnyos, but not chometz. Although pets, even in a halal-observant home, can be fed anything, many individual Muslims prefer to use pet foods without pork and other prohibited materials.

Health. As described above, the Muslim halal laws are focused on health. Although many people believe that the kosher laws are also considered to be among the laws that were given for people’s benefit, this is not the case. One of the few exceptions is the rule concerning the mixing of meat and fish, which was rabbinically instituted to avoid a problem with a particular fish which, when eaten with meat, made people sick. Because this is one of the few laws that are health laws, the Conservative movement recently saw fit to rule that it is no longer valid since we cannot identify the fish nor have any evidence currently of such a problem.

The most common health aspect of the kosher laws that is cited is the prevention of trichinosis in pork. This argument has 3 weaknesses. First, all flesh products can be a source of pathogens. The full cooking that is traditional in the Jewish community gives better pathogen control. There seems to be no religious law or custom (minhag) that mandates this practice. Second, the presence of trichinosis in mummified pork has not been demonstrated, and third, the incubation period for trichinosis (10 to 14 d) makes it unlikely that the ancient Israelites would have figured out the correlation at that time.

Regulatory

Dealing with kosher and halal supervision agencies. In practical terms, the food industry works with kosher and halal supervision agencies to obtain permission to use the supervision agency’s trademark symbol on their products. In this way, the industry can make claims in the marketplace that are legal and, more im-

portantly, credible to those intentionally purchasing these products. This potential choice provides a significant potential opportunity.

Kosher or halal supervision is taken on by a company to expand its market opportunities. It is a business investment that, like any other investment, must be examined critically in this era of Total Quality Management, Just-in-Time Production, Strategic Suppliers, and so on.

What criteria should a company use to select a supervision agency? Supervision fees must be taken into account, and the agency’s name recognition is a consideration. Other important considerations include: (1) responsiveness in handling paperwork, in providing mashgiachs or Muslim inspectors at the plants as needed on a timely basis, and in doing routine inspections at a defined frequency during the year (anywhere from twice a year to every day, including continuously), depending on the nature of the production; (2) willingness to work with the company on problem solving; (3) ability to clearly explain their kosher or halal standards and their fee structure. And, of course, one should consider (4) if the “personal” chemistry is right, and (5) if their religious standards meet the company’s needs in the marketplace.

One of the most difficult issues for the food industry to deal with in day-to-day kosher activities is the existence of so many different kosher supervision agencies. Halal has fewer agencies, but still has many standards. How does this impact the food companies? How do Jewish kosher or Muslim halal consumers perceive these different groups? Because there has not been a central ruling authority for many years in either religion, different rabbis and Muslim inspectors follow different traditions with respect to their dietary standards. Some authorities tend to follow the more lenient standards, while others follow more stringent standards. The trend in the mainstream kosher community today is towards a more stringent standard, since some of the previous leniencies were considered undesirable but were tolerated when fewer alternatives were available. The mainstream Islamic scholars also seem to be moving towards tighter standards so that approved products are acceptable to a larger audience.

One can generally divide the kosher supervision agencies into three broad categories. First, there are the large organizations that dominate the supervision of larger food companies, such as the OU (Union of Orthodox Jewish Congregations, Manhattan, N.Y., U.S.A.), the OK (Organized Kashrus Laboratories, Brooklyn, N.Y., U.S.A.), the Star-K (Baltimore, Md., U.S.A.), and the Kof-K (Teaneck, N.J., U.S.A.), all four of which are nationwide and “mainstream.”

A quick digression to explain the concept of “normative mainstream kosher supervision”: The concept of a normative mainstream U.S. kosher standard was the outcome of surveys of kosher foods in the supermarket by a food science class on kosher and halal food regulations taught each year at Cornell University. More than 40% of the grocery products in the supermarket have a kosher certification, and almost all of these reflect the same “normative” U.S. standard. This de facto kosher standard in the U.S. is represented by the major national supervision agencies—the OU, the OK, the Kof-K, and the Star-K, and recently the Half-Moon K. Many of the smaller kosher supervision agencies also use this same standard. There are numerous trademarked kosher symbols, over 445 at last count, used around the world that identify the ko-

Kosher or halal supervision is taken on by a company to expand its market opportunities. It is a business investment that, like any other investment, must be examined critically

sher supervision agencies and, indirectly, their different, and sometimes controversial, standards of kosher supervision (*Kashrus* magazine, October 2002). Some are more lenient than the “normative” standard, while others are more strict. The letter “K” cannot be trademarked; any person or company can put a “K” on a product for any reason. Symbol look-alikes sometimes occur both as kosher markings and as symbols used for other purposes; for example, the circle-K of a convenience store chain.

At the time of this writing, the Half-Moon K (KAOA Kosher Overseers, Los Angeles, Calif., U.S.A.), another large agency, is making a concerted effort to evolve into a normative mainstream agency. Two of these major agencies, the OU and the Star-K, are communal organizations, that is, they are part of a larger community religious organization. This provides them with a wide base of support, but also means the organizations are potentially subject to the other priorities and needs of the greater organization. On the other hand, the Kof-K and the OK are private companies, as is the Half-Moon K. Their only function is to provide kosher supervision. Although they do not answer directly to the community, like all kosher supervision agencies their reputation depends on community support.

In addition to these national supervision agencies, there are smaller private organizations and many local community organizations that provide equivalent religious standards of supervision. As such, products accepted by any of the normative mainstream organizations will, with an occasional exception, be accepted by other similar organizations. The local organizations may have a bigger stake in the local community since they may be more accessible and easier to work with. Although often having less technical expertise, they may be backed up by one of the national organizations. For a company marketing nationally, a limitation may be whether consumers elsewhere in the U.S. know and recognize the local kosher symbol. With the advent of *Kashrus* magazine and its yearly review of symbols, this has become somewhat less of a problem. *Kashrus* magazine does not try to “evaluate” the standards of the various kosher supervision agencies, but simply “reports” their existence. It is the responsibility of the local congregational rabbi to inform the congregation of his or her standards. Local rabbis who do not know enough about the “far-away” organization may be uncomfortable recommending it without calling one of the national agencies for advice.

The second category of kosher supervision (more stringent than normative mainstream) includes individual rabbis, generally associated with the Hassidic communities; that is, groups with standards beyond the normative Orthodox standard. These groups are often affiliated with the ultra-Orthodox communities of Williamsburg and Borough Park in Brooklyn, N.Y., Monsey, N.Y., and Lakewood, N.J. There are special food brands that cater specifically to these needs, such as Hadar or Liebers, for example. Many of the products used in these communities require continuous rabbinical supervision rather than the occasional supervision used by the mainstream organizations for production-line products. For local processing (bakery, deli, restaurant, butcher shop, and so on), either continuous or fairly regular supervision is the norm, often with a local rabbi visiting almost every day. The symbols of the kosher supervisory agencies representing these consumers are not as widely recognized beyond these communities as those of the major mainstream agencies in the kosher world. The rabbis for

these agencies will often do special continuous supervisions of products using a facility that is normally under mainstream supervision, often without any changes, but sometimes with special requirements for their custom production.

The third level is mainly individual rabbis who are more “lenient” than the mainstream standard. Many of these rabbis are Orthodox; some may be Conservative. Their standards are based on their interpretation of the kosher laws. Employing a more lenient rabbi means that the food processor cuts out more of the “mainstream” and stricter markets, but this is a retail marketing decision that each company makes for itself. More lenient supervisions are sometimes the only ones that will certify a product with a special problem that causes other supervisions to reject it. For example, since fish blocks, which are used for fish sticks and portions, are produced around the world, it is difficult to get proper on-site supervision to assure that all fillets in the block are really the species on the label. As a result, only a lenient rabbi will accept such blocks based on a rule of the majority and the assumption that governmental authorities are also monitoring this situation. Many consumers then make decisions based on this supervision.

Some companies have used the “Generic K,” (that is, the letter “K,” which cannot be trademarked). It is viewed suspiciously by many educated kosher consumers who realize that the symbol is generally used by one of the more lenient supervisions. A few large, national brands have used the Generic K for many years even though they have normative mainstream supervisions. Most kosher consumers are aware of these few companies (PepsiCo or Kellogg Co., for example). Although these companies do not seem to lose market share because of this decision, it is still viewed suspiciously by some consumers.

The Muslim community has only one mainstream agency at this time, the IFANCA (The Islamic Food And Nutrition Council of America, Chicago, Ill., U.S.A.), which is also recognized by many Muslim countries. Other Muslim groups are entering the field, but their standards are not as well defined. Some groups and individuals have resorted to certifying their own products. If one has any interest in exporting to Muslim countries or countries with a significant Muslim population, it is extremely important to know which countries will accept the supervision of which agencies.

In recent years, we have started to see products that have dual halal and kosher certification. The first were the military meals ready-to-eat (MRE) meals, but the market has since expanded to other industrial ingredients and consumer products. Some of the civilian versions of MREs are available in long-term shelf-stable (non-refrigerated) form that makes them convenient for use (Jackson 2000). Meat products are either glatt kosher or dhabihah halal, while the pareve and dairy products have the dual certification.

Ingredient companies should be particularly careful in selecting a supervision agency. They should try to use a “mainstream” kosher or halal supervision agency because most kosher or halal food manufacturing companies will require such supervision. The ability to sell to as many customers as possible requires a broadly acceptable standard. Unless an ingredient is acceptable to the mainstream, it is almost impossible to gain the benefit of having a kosher ingredient for sale. Ingredient companies need to pay attention to the status of the kosher product; that is, a pareve product is preferred over a dairy product because it has broader potential use. A joint ven-

For a company marketing nationally, a limitation may be whether consumers elsewhere in the U.S. know and recognize the local kosher symbol

Ingredient companies should be particularly careful in selecting a supervision agency. They should try to use a “mainstream” kosher or halal supervision agency

ture to make a lactic acid from whey failed, in part, because the major users of kosher lactic acid, pickle and olive manufacturers were all kosher-pareve; given that their products are often used at a meat meal, the use of a dairy lactic acid was counter-productive.

Food companies will have to pay increasingly more attention to halal standards. In many cases, a few changes make it possible to permit kosher products to also serve the halal community; for example, the true absence of animal products and care to assure that any residual alcohol in products is below 0.1%. Again, a supervision standard acceptable in all or most Muslim countries is desirable.

Note that the 0.1% alcohol in finished product standard is used by IFANCA and seems to be acceptable to the leadership of most halal communities. However, many halal consumers are not familiar with this standard at this time, so further education will be necessary.

There is some amount of interchangeability between kosher supervision agencies. A system of certification letters is used to provide information from the certifying rabbi concerning the products he has approved. The supervising rabbi certifies that a particular plant produces kosher products, or that only products with certain labels or codes are kosher under his supervision. To prevent fraud, it is helpful if these letters are renewed every year and dated with both a starting and ending date. These letters are the mainstay of how food companies and other kosher supervision agencies establish the kosher status of ingredients as ingredients move in commerce. Consumers may also ask to see such letters. Obviously, a kosher supervision agency will only accept letters from agencies they find acceptable. That decision depends on two components: the actual kosher standards of the other agency, and an assessment of how well they operate and enforce their supervision.

There are, of course, periodic recalls of specific products for various kosher defects that would prevent their use. *Kashrus* magazine (www.kashrusmagazine.com) and www.kashrut.com both try to provide up-to-date listings of products with problems, both of consumer items and industrial ingredients. Such a system of certification letters is also used in the Muslim community.

The kosher or halal symbol of the certifying agency or individual doing the certification may appear on the packaging. In some industrial situations, where kosher and nonkosher (or halal and nonhalal) products are similar, some sort of color-coding of product labels and packages may also be used. Most of these symbols are “trademarks” that are duly registered. In a few cases, multiple rabbis have used the same kosher symbol, causing consumer confusion.

Three additional notes about kosher and halal markings on products:

1. To ensure that labels are marked properly, it is the responsibility of the food company to show its labels to its certifying agency prior to printing. This responsibility includes both the agency symbol and the documentation establishing its kosher status—for example, dairy or pareve. It is the responsibility of the kosher supervision agency to review these labels carefully. Many kosher supervision agencies currently do not require that “pareve” be marked on products; others do not use the “dairy” marking. This causes consumer confusion, which could be avoided if every kosher product had its status marked. In addition to providing the proper information, having each product marked with its status would challenge everyone to pay more attention to properly marking products, avoiding recalls or announcements of misla-

There are periodic recalls of specific products for various kosher defects that would prevent their use

beled products. The letter “P/p” has been used for both Passover and pareve. We suggest using the letter “n” for pareve; that is, for “neutral”—consistent with the D for dairy and the M for meat.

2. The labels for private label products with specific agency symbols on their labels should not be moved between plants and cannot be used if supervision changes. This is why some companies, both private label and branded, use the generic “K.” Thus, if the kosher supervision agency changes, the label can still be used. The sophisticated kosher consumer, however, is more and more uncomfortable with this symbol; a major concern is that the labels may be too easily moved between plants, including plants that are not kosher.

The Kashruth Council of Toronto (COR) requires that each label have a plant number on it. This prevents the movement of labels between plants of the same company. This is the only agency that currently requires this additional safeguard.

If a company uses the generic “K,” the customer service and sales departments of the company (and those people representing the company at trade shows) need to know who the certifying rabbi is.

In many Muslim countries a generic halal symbol (the word Halal in Arabic in a circle), has been used indiscriminately. Muslim consumers do not have much faith in such a symbol. In North America some small companies have used similar generic markings or just the word Halal or letter H to signify that food is halal, but such symbols are not widely accepted. The Islamic Food and Nutrition Council of America uses a registered trademark logo of the letter “M” inside a closed crescent. Another agency, the Muslim Consumer Group, uses a triangle “H” as their logo. Many other halal logos have started to appear on packages in North America, usually on imported foods. Indonesia, Malaysia, Singapore, and Thailand have central halal control bodies, each with their unique logo. As the volume of halal products offered in local and international markets grows, it is expected that determining the standards for a halal certification will become more complex.

Federal and state regulations. Making a claim of kosher on a product is a legal claim in the U.S. The Code of Federal Regulations (21CFR101.29) has a paragraph indicating that such a claim must be appropriate, and approximately 20 states, some U.S. counties, and some cities have laws specifically regulating the claim of “kosher.” Many of these laws refer to “Orthodox Hebrew Practice” or some variant of this term; for example, reference to specific Jewish documents, and their legality is subject to further court interpretation.

Making a claim of kosher on a product is a legal claim in the U.S. The Code of Federal Regulations

New York State probably has the most extensive set of state kosher laws. These laws, however, were recently declared unconstitutional by the Federal District Court for Eastern New York and the verdict was upheld by the Federal Court of Appeals for the Second District. The appeal to the entire Second District for “en banc” review was denied. Just recently the Supreme Court of the U.S. refused to hear an appeal, so the State of New York is now working on developing a new law that will be constitutional. The original law includes a requirement to register kosher products with the Kosher Enforcement Bureau of the Dept. of Agriculture and Markets (55 Hanson Pl., Brooklyn, NY 11217). This part of the law was not declared unconstitutional and is still being enforced, and for now companies should certainly continue to comply.

The state of New Jersey has relatively new kosher laws because the state’s original laws were declared unconstitutional by the New Jersey State Supreme Court. It was the same problem as New

York; that is, requiring an "Orthodox" standard. The new laws focus specifically on "consumer right to know issues" and "truth in labeling." They avoid having the State of New Jersey define kosher. Rather, the food producer defines its terms and is held to that standard. Rabbis or anyone else providing supervision can then declare the information that consumers need to know to make an informed decision. In July 2000, New Jersey passed a bill extending the same protection to the Muslim community, and enabling regulations are being prepared. We hope that a similar approach will be adopted by other states, particularly New York State, and that all of the states with kosher laws will extend the same protection to food products produced with halal certification.

Since the New Jersey law was passed, four other states—Minnesota, Illinois, Michigan and California—have passed halal legislation. The new law in Illinois is of concern because of the potential for a violation of the separation of church and state in the First Amendment to the Constitution, a part of the Bill of Rights. The new law states: "The word "halal" is here defined to mean a strict compliance with every Islamic law and custom pertaining and relating to the . . ." We anticipate interesting legal follow-up, especially after the recent Supreme Court rejection of New York State's appeal.

Animal welfare. The largest fast food chains in the U.S. are seeking to develop a set of animal welfare standards that determine the purchasing of products they use in the U.S. and in many other markets. As it became clear that it was not ideal to have each supermarket chain and each chain restaurant come up with its own standards, the Food Marketing Institute (FMI, the trade association for many of the supermarkets in North America) and the National Council of Chain Restaurants (NCCR) appointed an animal welfare committee to come up with a single national animal welfare standard for each species as well as for animal slaughter and poultry slaughter. It is anticipated that these standards will be predominantly based on the animal welfare guidelines developed by the trade associations of production agriculture and meat processing, and that there will be issues on which the two sets of standards will diverge. The development of standards will have a major impact on animal agriculture throughout the U.S. and eventually around the world. These standards generally raise the bar in the U.S. for animal welfare, but are less aggressive than those currently being applied in Europe. The committee is exploring significant improvements in how *all* animals are raised and slaughtered. Initially, the effort has focused on each of the trade associations associated with the major animals of production agriculture (beef, dairy, chicken, turkey, egg layers, and pigs), and with the slaughter process for these animals. There are other issues under consideration. For instance, the egg-laying industry is committed to major increases in the space per bird, currently suggesting a reduction of approximately 15% of installed capacity nationwide.

Once the work is completed on these large-volume commodities, the FMI/NCCR committee will review standards for other animals, including sheep and goats, fish and shellfish (both wild-caught and aquacultured), farmed game animals and game birds, ducks, honey bees, and ratries (ostrich, emu, rhea, and so on).

Animal welfare issues that arise in religious slaughter are incorporated in the FMI/NCCR committee work. A discussion of issues appears in Regenstein and Grandin (2002), along with recom-

mendations for auditable standards that will be used by the FMI/NCCR auditors. These standards are consistent with the American Meat Institute requirements that all religious slaughter be done with the animals in an upright position (for mammals). The standard shackling line is also permitted for poultry religious slaughter. For more information, please see the FMI Website at www.fmi.org.

Conclusion

The food industry is challenged to accommodate the wide range of complex needs identified in this introductory article about kosher and halal. As the number of interested consumer groups grows, there is reason to be hopeful that more information and assistance will become available to the food industry in its efforts to serve them.

References and Additional Readings

- Blech Z. 2004. Royal jelly. In: Kosher food production. Iowa State Press. Forthcoming.
- Chaudry MM. 1992. Islamic food laws: philosophical basis and practical implications. *Food Technol* 46(10):92.
- Chaudry MM, Regenstein JM. 1994. Implications of biotechnology and genetic engineering for kosher and halal foods. *Trends Food Sci Technol* 5:165-8.
- Chaudry MM, Regenstein JM. 2000. Muslim dietary laws: food processing and marketing. *Encycl of Food Sci* 1682-84.
- Egan M. 2002. Overview of halal from Agri-Canada perspective. Presented at the Fourth Intl Halal Food Conference; April 21-23; Sheraton Gateway Hotel, Toronto, Canada.
- Grunfeld I. 1972. The Jewish dietary laws. London: The Soncino Press. p 11-12.
- Khan GM. 1991. Al-Dhabah, slaying animals for food the Islamic way. Jeddah, Saudi Arabia: Abul Qasim Bookstore. p. 19-20.
- Jackson MA. 2000. Getting religion—for your product, that is. *Food Technol* 54(7):60-66.
- Larsen J. 1995. Ask the dietitian. Hopkins, Minn.: Hopkins Technology, LLC. <http://www.dietitian.com/alcohol.html>. Accessed 24 April, 2003.
- Ratzersdorfer M, Regenstein JM, Letson LM. 1988. Appendix 5: poultry plant visits. In: Regenstein JM, Regenstein CE, Letson LM, editors. A shopping guide for the kosher consumer. For Mario Cuomo, Governor, State of New York. p 16-24.
- Regenstein JM. 1994. Health aspects of kosher foods. Activities report and minutes of work groups and sub-work groups of the R & D Associates 46(1):77-83.
- Regenstein JM, Grandin T. 2002. Kosher and halal animal welfare standards. Institute of Food Technologists Religious and Ethnic Foods Division Newsletter 5(1):3-16.
- Regenstein JM, Regenstein CE. 1979. An introduction to the kosher (dietary) laws for food scientists and food processors. *Food Technol* 33(1):89-99.
- Regenstein JM, Regenstein CE. 1988. The kosher dietary laws and their implementation in the food industry. *Food Technol* 42(6):86, 88-94.
- Regenstein JM, Regenstein CE. 2000. Kosher foods and food processing. *Encycl of Food Sci* 1449-53.
- Regenstein JM, Regenstein CE. 2002a. The story behind kosher dairy products such as kosher cheese and whey cream. *Cheese Reporter* 127(4):8, 16, 20.
- Regenstein JM, Regenstein CE. 2002b. What kosher cheese entails. *Cheese Marketing News* 22(31):4, 10.
- Regenstein JM, Regenstein CE. 2002c. Kosher byproducts requirements. *Cheese Marketing News* 22(32):4, 12. MS 20030025

The information in this article is as accurate as possible as of April 3, 2003. However, the final decision on any application rests with the religious authorities providing supervision. The ruling of the religious authorities may differ from the information presented here.

We thank Cornell Univ. students Catherine E. Savage, Peng Zhou, and Andrew Rosenberg for assistance with the abstract and Dr. Shawkat Toorawa of Cornell Univ.'s Near Eastern Studies Dept. for critical comments.

Author J.M. Regenstein is Prof. of Food Science, Cornell Kosher Food Initiative, Dept. of Food Science, Stocking Hall, Cornell Univ., Ithaca, NY 14853-7201. Author Chaudry is Exec. Dir. of the Islamic Food and Nutrition Council, Chicago, IL, and author C.E. Regenstein is Assoc. Chief Information Officer, Div. of Information Technology, at the Univ. of Wisconsin, Madison, WI. Direct inquires to author J.M. Regenstein (E-mail: jmr9@cornell.edu).