

TECHNOLOGICAL INNOVATIONS IN THE DAIRY INDUSTRY

KOSHER MILK PRODUCTION

Avodah Zarah 35b teaches that milk which is milked by a non-Jew without a Jew seeing him, is forbidden by rabbinical decree, due to the fear that it may contain the milk of a non-kosher animal. They further said (39b) in the following Mishnah: milk that is milked by a non-Jew is permitted for consumption if a Jew has the possibility to witness the milking. The Gemara clarifies that even in a situation where there is access to non-kosher milk which might be mixed in, there is no concern, because the non-Jew is fearful of the Jew discovering this adulteration, and therefore will refrain from such action since the Jews will then not purchase the milk. Another rabbinical decree was made forbidding cheese manufactured by a non-Jew and the Gemara provides no less than seven reasons, including use of forbidden rennet, danger of snake poison, use of adulterated milk and coating with lard. Shulchan Aruch rules that cheese of non-Jews is forbidden because it is set with enzymes from the stomachs of non-kosher calves, but then adds that even if it was set using plants (some still use enzymes extracted from thistles to set cheese), it is still forbidden (*Orach Chaim* 115:2). Rema comments: that is our custom and one may not break down the barrier set by Chazal. The Shach (s.19) explains that the prohibition of *gevinas akum*, non-Jew's cheese, is due to a blanket decree of the Sages, and if so, even in a place where the reason for the decree is not relevant, as in the case of vegetarian rennet, the decree stands in its place. Even if the reason is nullified, the regulation is not nullified.

THE HETER OF CHALAV STAM

The *Pri Chadash* (115:15) argued that the decree relating to milk is different from that of cheese, and is not a blanket decree, and in a place where one can establish that there is no access to forbidden milk, we can assume that the milk has not been adulterated, and such non-Jewish milk would be permitted. The *Chasam Sofer* disputed his assumption forcefully, asserting that both the milk and cheese decrees remain equally binding irrespective of the stated reasons (*Teshuvos Chasam Sofer, Yoreh De'ah* 107). Rav Moshe Feinstein also did not accept the *Pri Chadash*'s postulation of non-adulteration but argued that government controls of "companies" through health regulations creates a fear equivalent to a Jew watching the milking (*Igros Moshe, Yoreh De'ah* 1:47). Rav Yaakov Breisch has vigorously disputed the various support proofs advanced by Rav Moshe (*Chelkas Yaakov, Yoreh De'ah* 35). The *Aruch HaShulchan* adds that rabbinical decrees have undisclosed additional reasons aside from the stated concerns. There is a vast literature on this controversy, but my intention here is to focus on how this discussion relates specifically to the innovations of robotic milking and video surveillance. The underlying point of contention between the two sides appears to be whether the Jew's supervision serves to provide knowledge that no adulteration has taken place, or that the Jew's visual review is a rabbinical decree regardless of its function. What is the essential requirement - factual knowledge that there are no kashrus issues or the Jew seeing the activity with his own eyes for whatever reason?

VOLUNTARY MILKING

Traditional milk parlors cannot cope with the milking of several thousand cows as found on some modern farms. They utilize automated milking systems with voluntary milking, where there are no set times for milking. A cow is encouraged to come to the milk parlor with special food inducements and as she enters, her identity tag is scanned to ensure that she has not been milked too recently, in which case the gate will not open. In fully automated systems the milking is done by robots without human intervention, and the suction cups are affixed to the udders guided by ultra-sound sensors and laser scanning. The larger farms use a carousel system with automated entry of the cow onto the carousel, but the cups are affixed manually. However, the revolving stage of the carousel allows the farmer to stand in one place and deal with each cow in just a few seconds. The circuit of the carousel is timed for the number of minutes needed to complete the milking, around 6 to 10 minutes, and the cups get automatically released when the milk stops flowing, following which an automatic gate opens for the cow to exit. If it is fully automated, it could be argued that the milking is not being carried out by non-Jews, as no human activity is involved, and Chazal's decree of milk milked by a non-Jew, may not apply (*Nasan Lirei'av* p.191).



The carousel rotates for the time it takes to complete milking a cow.

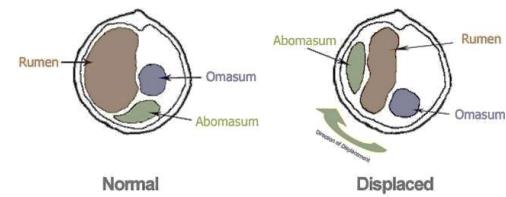
TECHILAS CHALIVAH

A problem arises in connection with automated milking as to when is *techilas chalivah* - the beginning of milking? Halachah demands that the *mashgiach* must attend the beginning of milking and after that there can be reliance on

yotzei venichnas - occasional visits. When a group of cows are milked together, they are considered one unit, and the beginning of milking would relate to that group. In a voluntary milking system, cows are being milked continuously 24 hours a day, usually with each cow being milked three times a day. It is difficult to identify a beginning of milking under such a system, and each cow could be considered an individual milking rather than part of a batch. Since milking is an ongoing process 24/7, when does the *mashgiach* have to be present? Since the system only allows cows with eligible IDs to enter, this would guarantee that no forbidden animal would be milked. Rav Mordechai Gross rules that, in conjunction with Rav Moshe's "companies" leniency, we can rely on the automated system controls to guarantee the kashrus without attendance of a *mashgiach*. Some may treat the entire herd of thousands of animals as a single unit, but then there is never a point where milking starts, and a *mashgiach* just needs to attend when the system is set up for the first time or terminated for cleaning (Rav Avraham David Moskovitch of London Beis Din, *BiNesiv HaChalav* vol.3, p. 91-100). However, stricter kashrus authorities do not accept this understanding of the start of milking and will require attendance of a *mashgiach* where the dairy is under non-Jewish ownership (*Nasan Lirei'av* p.191). There must be safeguards within a secure system where the data cannot be tampered with. It then is regarded as equally reliable to a *mashgiach*'s check, even according to the Chasam Sofer (Rav Mordechai Gross, *BiNesiv HaChalav*, vol.1, p. 56). However, without supervision, it is possible to introduce milk from external sources. Therefore, it is the practice of the quality kashrus organisations to insist on continuous 24-hour *hashgachah*, using a team of full time *mashgichim* working in shifts (*Kashrus HaMa'achalim* p. 302). This difference of approach creates problems where a product, for example, milk powder, whose production involves huge quantities of milk often using robotic milking, is manufactured based on more lenient standards. Although it has a *mehadrin hechsher*, it will not be used as an ingredient by stricter kosher manufacturers.

SURGICAL OPERATIONS

Another major problem nowadays relates to displaced abomasum surgical operations which can render the cow *treifah* and consequently, its milk would be *treifah*. The abomasum is the fourth stomach of the cow which normally resides underneath the rumen which holds it in place because of its vast size. If the rumen is smaller than it should be for any reason, the abomasum may roll out from underneath it and move upwards. Sometimes this requires a surgical procedure to correct it and depending how it is done, may cause the cow to be classed as *treifah*. In regular manual *mehadrin* milking systems, the *mashgiach* would try to identify which cows had such operations from each cow's logbook and ensure that those cows were not included in the supervised milking, which is a difficult exercise. In robotic milking, the computerised system has a database that stores the medical history of each cow and can be programmed to automatically divert unwanted milk, where a certain cow's milk must not be mixed with the rest. For example, the milk of a cow on antibiotics cannot be used, and such cows will be identified by scanning its ID tag on entry into the milking parlour and thus identified, its milk will be diverted as it is tainted with antibiotics. This facility is used in *mehadrin* production, and details of cows which had abomasum problems are fed into the computer to ensure that any milk from cows that had undergone surgery is diverted and not included in the kosher batch.



Left Displaced Abomasum (LDA) often requires surgical treatment making the animal treifah.

VIDEO SURVEILLANCE OF MILKING

Video surveillance has been used to great advantage in assisting kashrus supervision in several areas and has been accepted in the past by most *poskim* as being equivalent to the attendance of a *mashgiach*, subject to some pre-conditions. The cameras must be part of a secure system and cover the whole milking area, including a view of the equipment before the start of milking, and the video recordings were to be viewed each day by the *mashgiach* to check that no adulteration of the milk took place, as if he was in attendance. A non-Jew carrying out the milking must be aware of the surveillance in order to create the "fear" required by *halachah* to act as a deterrent against him adulterating the milk. Rav Shmuel Wosner additionally required that the *mashgiach* should attend in person at least 20 times over the year. However, after reviewing the system in practice, it was found that the systems in place failed to meet the criteria set by the *poskim*. Investigation showed that the video recording system was not secure, and management could easily tamper with the recordings. Recordings were missing or incomplete and in practice *mashgichim* did not view the recordings as stipulated. Rav Zeev Weitman, Rav of Tenuva, argued that occasional viewing was sufficient to create "fear" if the staff thought they were being watched (*Nesiv HaChalav* vol. 5, p. 88). As a result of these deficiencies, the stricter kashrus agencies have withdrawn their permit of video surveillance without any *mashgiach* in attendance. Rav Moshe Sternbuch writes that there were other reasons why Chazal required personal *hashgachah* of milking, as this was part of the decrees to protect against social interchange with non-Jews. Aside from the kashrus aspect, supervision of milk parallels the *bishul Yisrael* requirement, where Jewish involvement with food preparation acts as a restriction against dining with non-Jews (*Teshuvos VeHanhagos* 5:255).