**Zoning in the food industry**

Zoning is the subdivision of the processing areas in the factory to keep the food clean, i.e. to avoid possible contamination. This article covers the creation and maintenance of hygiene zones to ensure optimal separation in order to protect the food.

Zoning is nothing else than dividing the facility into different zones according to hygienic requirements. The goal is to avoid contamination with foreign bodies, chemicals, microorganisms and allergens in raw materials, semi-finished products and products during operation. This means clean food should be shielded from the environment, from animals, from unhygienic human contact (hands, sneezing), dirty air, etc. For small businesses, a division into "clean" and "not clean" may be sufficient. All areas where no open food is stored or not being processed are "not clean". Technical and changing rooms, toilets, etc. are non-clean areas. The "clean zone" is where open food is handled or processed.

In larger facilities it makes sense to divide into further zones such as: basic hygiene zone (often called green or black zone), Medium-Hygiene-Zone (often called orange or grey zone), High-Hygiene-Zone (often called red or white zone). For simplicity, office space does not need to be zoned.

**Criteria risk level**

The classification is based on the degree of risk of product contamination. In large facilities rooms for storage of raw food before the heating step are assigned to the Medium-Hygiene-Zone, while open cooked and ready-to-eat foods without further heating steps are assigned to the High-Hygiene-Zone and processed there. Structural measures (e.g. separation, ventilation) as well as setting clear rules for employees are important in implementing zoning.

The zones should be arranged in such a way that they make sense with regard to the flow of goods and people. This sounds simple, but may become a challenge if a facility has grown organically over time. Therefore, it is important to set a master plan from the beginning, i.e. when setting up a business it is advisable to already envisage where future extensions might be built. Otherwise you might suddenly realize that the arrangement should be different, because extensions might strangle the operation in the future.

Ventilation (natural or artificial) must be sufficiently ensured. For clean rooms the air must be filtered and there must be an overpressure to the other zones. In the Medium-Hygiene-Zone one can also work with natural ventilation. Should it be necessary to open the windows, an insect screen must be mounted in front of them. The outside air should be as clean as possible and dust-free. If this is not the case, filtered air must be used. For the filters it is best to use two filters: a coarse filter (for example, size G4) and after a fine filter (for example, F7). The filters must be easily accessible for checks and replacement. If there is artificial ventilation, the temperature in the rooms can be regulated and ensured with the integral heating or the cooling registers in the ventilation respectively. The drying of air can also be done in this way, which is important for complete drying after wet cleaning.

**Rules for the staff**

Each zone is defined in terms of cleaning and rules for employees. For these, it must be clear what the standards are. In the Basic-Hygiene-Zone, safety shoes and work clothes are sufficient; in the High-Hygiene-Zone, special shoes, headgear and special work clothing are required. The cleaning concept determines which cleaning and disinfecting agents are used. Another question is when a dry cleaning is sufficient and when wet cleaning is necessary. Basically, for the production workers, there must be enough hand basins with hot and cold water available in suitable locations. Detergents and disinfectants are to be placed in lockable cabinets or outside of production area in a ‘not clean’ zone.
It is important that zoning is in place at all times. If, for example, the cleaning crew does not stick to zoning at night, this can lead to undesired cross contamination.

Most difficult are the transitions from one zone to another. These people flow transitions should be designed in such a way that it is easier for the employees to stick to the rules rather than to ignore them. Turnstiles make sense for larger companies. Hand and shoe cleaning and disinfection can also be combined with it. The rules apply to all employees and should therefore be understood by all. This begins with putting off jewellery/watches, hand washing/disinfection and appropriate conduct in the different zones. Training and clear signalisation is a must.

**No Trojan horses**

When moving goods, one has to pay attention to "Trojan horses". In the conquest of Troy in Greek mythology the enemies hid in a huge wooden horse. This was brought into the city by the city residents themselves. At night, the enemies got out of the horse, opened the city gates and let in more warriors. And so, Troy fell to the Greeks. Similarly, contaminated pallets, baskets and packaging may bring dirty particles (enemies) into clean rooms with such polluted packing materials. That is why it is important not to get dirty pallets into the clean zones. For High-Hygiene-Zones, own tools and cleaning tools are to be used.

Tubes and electrical cables that go from one zone to another need to be sealed properly. The medieval knights built their castles in a comparable way. Not that hygiene was the focus, but gold and supplies. A large wall with a courtyard protected the main tower. Around this wall was then, as additional protection, a moat. Zoning is set up in the same way. To achieve optimal separation, the open foods are best protected and shielded from the outside world. The measures must be well coordinated. It also applies here: the chain is as strong as the weakest link. So, one has to strengthen the weakest measures to improve the overall effect. It may be worthwhile to hire a specialist to ensure not only a clean operation, but also a smooth flow later.

John C. Brunner, GMP-Support-Company, Militärstrasse 52, 8004 Zürich
Mobile: 076 401 61 85
info@gmp-support-company.ch

We are food professionals who have worked with major manufacturers for decades.
Now we support food companies who want to improve themselves and their standards.
Our services are: assessments, project support, consulting, training and coaching in the field of good manufacturing practice. We are strong in implementing simple and effective control measures.
For details see: [www.gmp-support-company.com](http://www.gmp-support-company.com)