QS. Ihr Prüfsystem für Lebensmittel.

IFS Food

IFS Pest Control Guideline

VERSION 2

ENGLISH

IFS would like to thank all members of the national working groups, international technical committee, IFS Team and experts who have actively participated in the conception and review of this guideline.

We are particularly grateful to Daniel Schröer (Co-Owner and CEO of Futura GmbH), whose experience, knowledge and insights have made this guideline possible, presenting a practical approach to the implementation of pest management principles. We would also like to thank him for providing us with the large number of pictures and illustrations. Furthermore, we would like to thank ANID (Associazione Nazionale delle Imprese di Disinfestazione) for their valuable contribution and additional comments.

This guideline is a supporting document relating to pest management. It is not a normative document, and its implementation is not mandatory.

Pest control is subject to different regulations in different countries and regions, which must be taken into account.

Quality assurance and safe food are the common goal of IFS and QS. To achieve this goal, the highest hygiene requirements must be met in the food chain. For both standards, comprehensive guidelines and supporting documents have been developed together with experts. In addition to the present supporting document, you will find the QS supporting document listeria prevention under the following link.

QS-Supporting-Document-Listeria-Prevention_FINAL.pdf

In case of any queries regarding the interpretation of IFS Standards and Programs, please contact standardmanagement@ifs-certification.com

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1 Introduction

1 INTRODUCTION

Pest control deviations are commonly reported by IFS Auditors. We offer this guideline to help IFS certified sites understand our requirements and to inform them about current pest management developments.

There have been significant shifts and disruptions in the economy in the last decade, along with rapidly advancing digitalisation in many areas. Governments and society are expecting companies to act sustainably and responsibly. A prominent example is the European Union's "Green Deal". This initiative has significant implications for the entire food industry. More and more, companies need to consider the environmental impact of their actions and how they can improve their businesses more sustainably.

This development also involves pest management in the food industry. It will no longer just matter of ensuring the necessary controls but also of reducing the associated environmental impact. We explore innovative, more sustainable, and safe techniques in this guideline and the role digital tools play in this context. Both aspects are essential for a targeted integrated approach to pest management.

The IFS Pest Control Guideline gives readers a better understanding of the IFS Requirements relating to this topic, and it clarifies responsibilities in different areas. We focus mainly on the rodents causing the most damage on average at IFS certified sites. However, businesses can also apply the Integrated Pest Management (IPM) principles to other pests.

The Pest Control Guideline is updated to the latest IFS Standard versions. It refers, with some examples, to the IFS Food version 7 requirements giving guidance and further explanations for their implementation. In an extra chapter, we provide references applicable to the other IFS Standards.

IFS corporate values support IFS certified and assessed businesses with complimentary, practical resources like this guideline. In addition, IFS offers numerous supportive tools.

Visit our website for more information:
ifs-certification.com –IFS Database – Tools

2 What's new: Integrated pest management

2 WHAT'S NEW: INTEGRATED PEST MANAGEMENT

Inclusion of Integrated Pest Management (IPM) towards more sustainability and efficiency

2.1 Overview of new elements

Working with pest control requirements in various industries has led to the development of new technologies and new ways of thinking. The IPM approach is applicable to agricultural and non-agricultural environments and has become the "golden standard" in the food industry. It is the foundation for all pest management professionals.

IPM stands for integrated pest management which aims to keep pests away from the facilities by directing treatment to harborages and potential entry points. This minimizes the amount of pesticide needed and avoids the need for measures to be taken in the inside facility.

The focus is on preventative measures based on facility maintenance and sanitation.

While the principles of IPM remain unchanged, the way in which these principles are implemented is constantly evolving and requires commitment to continuous improvement. This guideline aims to promote the implementation of IPM as an elementary part of the risk-based assessment of IFS certified sites.

In order to optimise an efficient and sustainable pest management system according to IFS requirements, two new aspects considering global developments and environmental challenges have been added to the guideline – sustainability and new tools including digitization.

To reduce the environmental impact of human consumption and production, the European Commission set the European Green Deal with the goal of making Europe climate neutral in 2050. It sets the blueprint for transformational change and will result in numerous legislative changes with objectives extending to many different sectors, including construction, biodiversity, energy, transport and food. It maps a new, sustainable and inclusive growth strategy to boost the economy, improve people's health and quality of life, promote care for nature and leave no one behind.

European Green Deal logo

In the food sector, the Farm to Fork Strategy is at the heart of the Green Deal with the goal to establish sustainable food systems for healthy people, healthy societies and a healthy planet.

As part of the supply chain, this means that the food manufacturing industry not only has to ensure food safety and regulatory compliance but also needs to address the shift towards more sustainability.

Manufacturers find themselves here in a dual position: as a supplier, they have to respond to the demands of their clients, but at the same time, as customers, they can drive the change for their suppliers and service providers. Minimising the use of pesticides and harmful substances has become an essential part of this sustainability aspect and the number of new tools is evolving continuously. A variety of sustainable products are now available for pest management professionals and their efficiency has improved, resulting in more environmentally friendly solutions. This enables a continuous reduction in pesticide use.

These new tools also include digital "helpers": early warning systems or 24/7 surveillance of boxes, traps and monitoring points through "Internet of Things" products are now available and their efficiency is improving. These are e.g. connected boxes, traps or other devices that run on SIM cards and connect with the internet 24/7. A growing number of IFS certified sites have successfully implemented these tools and as a result, rodent infestations are detected a lot earlier and actions can be taken quicker and more efficiently. These control actions can then include all available tools including the use of biocides (see IPM pyramid below): targeted, intensive but short measures can prevent further spreading and reduce the overall application of baits and traps in the long term. Manufacturing sites can now evaluate the new tools as a possible option as part of their efficient on-site prevention.

The main goal is improving the environmental impact by using sustainable IPM principles. The ability to observe and analyse events alongside the culture of collaboration based on adequate technical knowledge, will allow the problems to be addressed in the best possible and compatible way. This takes into account the different climatic specificities and different types of environments.

2.2 Integrated pest management (IPM) – What is it?

The science of IPM is not a new theory, but one that is established worldwide in the professional pest management field. Its aim is to prevent, monitor and control the determined target species at specified locations with materials that pose the lowest risks to humans, beneficial species, non-target organisms and the environment. The approach is based on up-to-date, scientific information about pests and their interaction with the environment. IPM stands for a variety of possible actions from constructional design and hygiene, to physical, and biological to chemical control.



Examples of risks that biocides (PBT substances) pose to the environment and especially to non-target organisms through direct consumtion of bait or secondary poisoning (consumtion of poisened prey).

IPM is the optimal strategy to control pests utilizing a variety of control methods while reducing the reliance on pesticides. In simple terms IPM calls for identifying the sources of pest infestation, identifying conditions which contribute to pest infestations, monitoring for pest activity, and focusing control efforts at the sources of pest activity.

IPM is a cooperative effort between the pest control professional and the food production chain management. The concept of IPM and the factory's role in the program must be communicated to the factory's management and its employees. Without their cooperation, IPM cannot succeed.[1]

The IPM pyramid implies that pest management professionals spend most of their time on the three largest bottom fields: the cultural and sanitation practices followed by physical and mechanical controls and after that, the biological controls and biocides. Unfortunately this approach is often not followed in practice and biocides are used without sufficient research on preventative and alternative measures in the three bottom fields. Chemical pest control measures are frequently used to reduce pest infestation peaks, but do not present a long-term cure, which can only be achieved in collaboration with the bottom three layers of the IPM pyramid. The reduced chemical use within IPM practice also avoids pests developing a resistance to certain substances.

Most biocides used are against rodents as they account for the biggest share of pest problems internationally. According to experts, rodent damages are responsible for 60 percent of the pest problems.[2] The same recommendations apply to insects or other pest species: prevention, exclusion, hygiene and logistics management can reduce population and ingress by up to 90 percent. [3]

Most rodenticides are PBT (P – Persistant /B – Bio-Accumulative /T – Toxic) substances and pose a high risk to our environment. These substances are controlled by ECHA (European

1 NPCA Pest Management Library ed.1997 Integrated Pest Management in retail food stores pag.43)
2 Source: The Rentokil Report 2015https://www.rentokil-initial.com/~/media/Files/R/Rentokil/documents/the-rentokil-report-2015.pdf
3 https://lancaster.unl.edu/pest/roach/cockroach%20manual.pdf

Chemicals Agency) and any treatment with rodenticides must consider risk mitigation measures to avoid secondary poisoning of non-target animals in the environment. In this context, the loss of biodiversity and adverse consequences for human health from PBTs in the supply chain must be taken into account. The environmental impact of any treatment from the IPM category "chemical control/biocides" should therefore be minimised.

If chemical control agents are applied regularly, a revision plan needs to be implemented: this should explain why and whether the treatment complies with current local regulatory requirements (risk mitigation measures) and how the operator plans to move to lower IPM categories within the IPM scheme. The most efficient and sustainable measures are always the first stage of the cultural and hygiene measures.

NOTE: Biocides can also be of the type silica gel, diatomaceous earth or pheromones identical to the one produced by the insect etc. so not all chemical biocides have a negative impact on the environment.

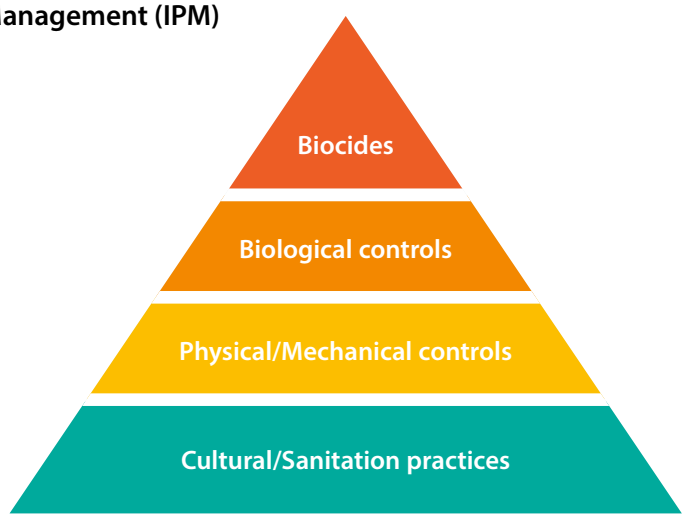
What are PBTs or vPvBs?

These are chemicals that are persistent (P), bioaccumulative (B) and toxic (T) or very persistent (vP) and very bioaccumulative (vB). This means that they degrade very slowly in the environment (=persistent), accumulate in organisms and thus in the food chain (=bioaccumulative), and are toxic (=toxic) to humans or organisms in the environment. In principle, the entry of PBT substances into the environment must be avoided, irrespective of their concentration (in the product) and quantity, since such substances – once released into the environment – are not degraded or are degraded only very slowly and can thus remain in waters, soils and also in the food chain for very long periods of time.

Source: Umweltbundesamt, https://www.umweltbundesamt.de/service/uba-fragen/was-sind-pbtvpvb-stoffe

FIGURE 1

Integrated Pest Management (IPM)



See explanatory green box on pages 9/10

Cultural controls (non-invasive)

Cultural controls are practices that limit the pests entering, reproducing, spreading and surviving in the facility.

Examples:

- install raptor perches for raptor birds to live by the site and keep other birds and rodents away
- cut down hedges and grass directly at the factory
- have at least a 1m stone/cement border between building and grass
- install pigeon/bird spikes and netting against birds polluting the buildings or nearby area
- install insect nets at the windows
- keep windows and doors shut, so no pests can ingress
- have sewer entrances protected with IPM metal exclusion clips at the leaf filter to keep rodents out and away

Hygenic examples:

- regular cleaning of surfaces, making sure no insects can live off residues of food production or storage
- drain cleaning
- garbage management in place (storing and removing garbage regularly)

Physical and mechanical controls (invasive)

Physical and mechanical controls kill, block or create an unsuitable environment for the pests.

Examples:

- use traps, e. g. approved snap traps with or without digital surveillance (remote monitoring) for efficient control and management of rodents
- application of different mode-of-action catch traps that mechanically capture and humanely trap rodents
- use multi-catch traps e. g. in outdoor areas when rodent population is large
- sticky traps with pheromones for flying and crawling insects

Biological controls

Biological controls are the use of natural enemies – predators, parasites, pathogens, and competitors – to control pests and their damage.

Example:

- use beneficiary insects to reduce e. g. moth population when safe for products

Chemical controls / Biocides:

Chemical control is the use of pesticides. In IPM, pesticides are used only when needed and in combination with other approaches for more effective, long-term control. With IPM you'll use the most selective pesticide that will do the job and be the safest for other organisms and for air, soil and water quality.

Examples:

- rodenticide baiting against rodent populations for acute control measurements when other
- methods have failed

- spraying against insects
- gel baiting against cockroaches
- fogging against insects (rather unpopular and proven to be semi-effective method nowadays)

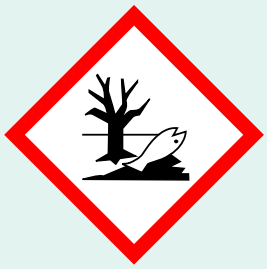
Source: based on UC- IPM Statewide Integrated Pest Management Program, UNIVERSITY OF CALIFORNIA AGRICULTURE AND NATURAL RESOURCES

Biocidal Products: Regulation (EU) 528/2012

Until the mid-1990s, biocides were placed largely untested on the market in the European Union (EU). This changed when the Biocidal Products Directive (Directive 98/8/EC) came into force in February 1998. With the directive, the EU created an instrument for the evaluation and authorization of biocidal products in Europe. The aim of the EU-wide uniform regulation is to protect human health and the environment, while recognizing the benefits of biocides. Since July 2012, the Directive has been replaced by Regulation (EU) No. 528/2012 (Regulation concerning the making available on the market and use of biocidal products), which is directly applicable in all member states.

The authorization process for biocides is coordinated by ECHA, the European Chemicals Agency based in Helsinki, Finland.

If the assessment reveals an unacceptable risk to humans or the environment, conditions and requirements for use may be imposed to minimize the risk of adverse effects. If there are no reasonable and feasible risk reduction measures for an application under consideration, the active substance cannot be approved in the product type concerned or the product cannot be authorized.



Symbol Environmental Hazard

Carcinogenic / harmful to health

Source: based on umweltbundesamt.de/themen/chemikalien/biozide/zulassungsverfahren#die-biozid-verordnung-der-eu

IPM is the basis of all pest control operations. Its active execution, documentation and continuous improvement should be part of the hazard analysis and reviewed once a year (see also hazard analysis example in Annex). The role of the "trained pest management professional" as a collaborator in defining the best operational strategies necessary at the site in a particular moment and situation, should also be considered. The IPM implementation in regard to sustainability does not need to be complicated: A simple statement per area about the improvements can be sufficient.

2.3 Prevention/cultural control – a crucial element in IPM

The term "prevention" in connection with pest control refers to all measures taken to exclude and ward off pests, create unfavorable conditions for pests to harbor and breed, and to facilitate their identification.

Prevention involves both contracting parties (client and service provider) and any measures must be harmonized and coordinated. The parties must inform each other of any abnormalities identified during the pest monitoring/visual inspection and provide evidence that these have been dealt with. Which of these measures are to be implemented depends on the individual case and is based on the hazard analysis, risk assessment and the pest control plan (DIN EN 16636:2015-05 pp.13 et seq.).

The IPM program is the result of an individual assessment, which must cover all areas in and around the facility, as well as an evaluation of the practices, historical data and conditions that may affect the IPM program.

Proofing against pest ingress is the most important measurement in IPM pest control. It's basic, but it's the most important first step and basis for any pest control program around the world.

1. Structural proofing of the premises

Structural proofing can be divided into external and internal proofing. Depending on the circumstances, the surroundings may also require special attention. The following is a non-exhaustive list.

External proofing

Proofing of:

- → windows by installing fly screens to control ingress of flying insects
- → door gaps e. g. by installing under-door brushes to keep out rodents and crawling insects
- → factory gates e. g. by installing slat doors to control ingress of flying insects and birds
- → entrance areas e. g. by installing an air lock to control pest ingress
- → the entire premises or individual spaces e. g. through internal positive pressure to control ingress of flying insects and e. g. mealworm beetle
- → piping and ducting
- → drainage points
- → cable feedthroughs

Technical solution to control bird ingress

- → netting
- → spikes
- → other physical means to keep birds out of buildings e. g. laser or reflection technologies as repellants

Prevent possibilities of colonisation through hygiene, gardening and building management schemes which create environments that deter pests

- → cultivate the site's area in a way that offers minimal potential spaces for pests to colonize
- → this may include e. g. cutting down bushes, leaving a min. 2 m cement or stone separation between wall and green area
- → use netting against insects
- → policy needs to be in place for keeping windows and doors shut
- → using "sewage protection rings" (closing the gap between dirt collection filters and man-holes) against rodents to prevent them entering through the sewage system or colonization in the sewage

Examples of IPM Pest Control, e. g. bird spikes, proofing and exclusion with sewage protection ring. Exclusion, hygiene and creating an environment that makes nesting near impossible is the first step.

Internal proofing

The internal proofing of premises against the spreading of harmful organisms is largely based on the same measures as those recommended for external proofing.

2. Good Hygiene Practice and Good Manufacturing Practice (GHP / GMP)

The most important measure for preventing pest infestation is maintaining general order and cleanliness. Preventive measures are aimed at depriving potential pests of food and leaving them no places to harbor. These include correct storage, regular waste disposal and hygienic handling of food.

Take into account facts such as:

- a mouse can get into your production site through a gap roughly as small as the diameter of a pencil
- a mouse can climb up walls with a rough facade without any difficulties
- mice and rats can also survive in cold storage rooms within the insulation
- rats can build their corridors even if there is a thin layer with split/grit, it needs at least 30 – 50 mm pebbles
- all pest control measures against insects is temperature dependent
- sometimes you find "pointer organisms" in your production site which are not direct pests but which show you that there is a problem of either the structural kind or a hygienic issue (e. g. mould).

The following is a non-exhaustive list of GHP/GMP measures:

→ Remove food sources e. g. under or in cupboards/lockers, cable raceways, etc.

→ Prepare organizational solutions (e. g. length of time that goods at risk are stored in external areas)

→ Inspect incoming goods for potential infestation

→ Organize appropriate, hygienic disposal management

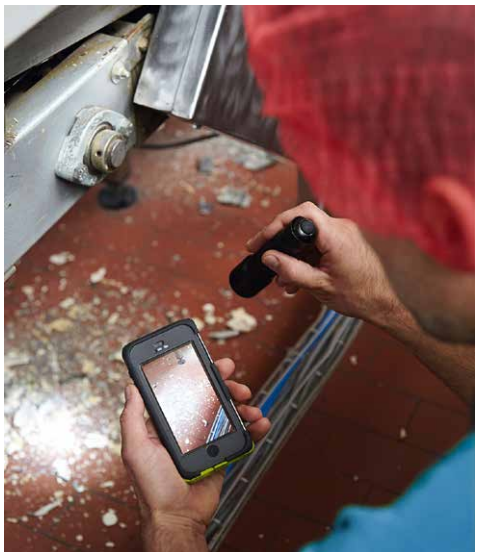
→ Select appropriate materials when designing the building including alterations, extensions or redevelopments.

→ Provide input into landscaping of company grounds (e. g. ground cover, pond, distance from building etc.)

→ Carry out regular visual inspections, including relevant documentation e. g. during plant inspections

→ Provide training and raise awareness among staff; identify infestations in the company; implement reporting chain, escalation procedure within the company, company-specific measures

Control points never replace the monitoring of spots on site, which a technician should have time for as well.



Food product residues must be removed and disposed regularly so that pests cannot feed off them and survive, populate, spread and become an almost uncontrollable invasion and thus a threat to your site and to the goods you store and manufacture.

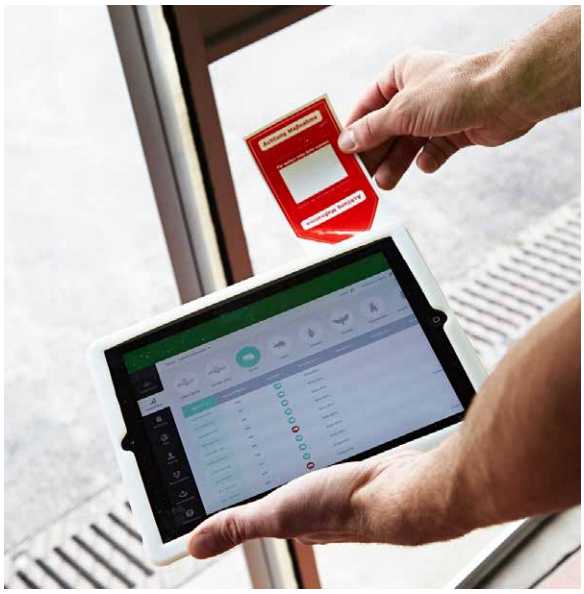
The manufacturing site is responsible for the implementation of the above-mentioned measures, but the pest management professional will provide advice and support. Remember that any pest control measures are not sustainable if the support of the company or site is missing.

2.4 Sustainability – the result of an active IPM

In order to continuously reduce the environmental impact of the pest control program, an effective prevention system based on the hazard analysis should be implemented. This includes an active recommendation management, where the company and the pest management professional identify which issues can be improved. These are usually structural, sanitation and procedural issues. Who takes care of what and when should be documented. Monitoring is a key element in promoting sustainability, as it enables early detection of infestations.

The monitoring of rodents should be first executed with non-toxic products, especially outdoors, where the risk of direct and secondary poisoning is high. A permanent chemical monitoring and control measure is neither an efficient nor desirable instrument for ongoing pest prevention. It is therefore necessary that the management of such measure is described and discontinued after treatment. As sustainability becomes more and more important, the hazard analysis needs to contain a plan on how the site is reducing the overall biocide footprint. This can be achieved by for e. g. using less biocides, starting outdoors, moving further indoors as the site's IPM program advances further to pest exclusion and an efficient integrated and comprehensive management system.

IPM examples



A monitoring system consists of fixed monitoring points that allow comparative assessments over a longer period of time for thorough pest control

Insect infestation in an organic bait. Organic (non-toxic) monitoring baits contain e.g. bread or other organic substances. The disadvantages are that they attract insects and rodents, who actually use the bait as a source of food for survival. They also contain allergens and form mould or rot like normal food. The bait also lasts only a few weeks up to –2 months and must be replaced frequently.

Example of synthetic monitoring blocks – These synthetic blocks are made of plastic with a flavour and last for 3–12 month. The rodents only nibble because they suspect food underneath, but do not eat it. From the typical bite marks you can recognize if this is a rat or mouse. They are allergen-free, cannot become mouldy and don't attract other insects. They are suitable for indoors and outdoors. The smell can attract rodents from a 10 to 100 cm radius.

Moth pheromone traps can be used in several ways:
1. It can be an effective control measure.
2. Mating pheromones can prevent or reduce moth reproduction

Cockroach and crawling insect monitoring with sticky pads, also available with cameras for intelligent 24/7 monitoring.

The hazard analysis must show how and why IPM is implemented. The responsible pest management professional and site management need to be committed to work towards IPM oriented sustainable solutions. Environmentally friendly and allergen-free monitoring devices as well as different traps should be used for site monitoring, based on the hazard analysis.

Monitoring equipment can include non-toxic boxes, non-toxic monitoring blocks, traps, synthetic aroma solutions or digital early warning systems. These devices have to be in line with current food regulations which prohibits the usage of allergenic or hazardous products.

A critical look is needed, if a pest management professional continuously applies new biocide bait products against pests without other documented IPM prevention steps, such as sealing-, hygienic- or monitoring measures. The method of "permanent baiting" is no longer permitted in most EU and should also be avoided outside the EU for reasons of sustainability. The food business operator and service provider shall evaluate internally within the hazard analysis and risk assessment how the permanent biocide application can be reduced or discontinued. In any case, the use of rodenticide baits must be justified based on specific evidence by the trained pest management professional.

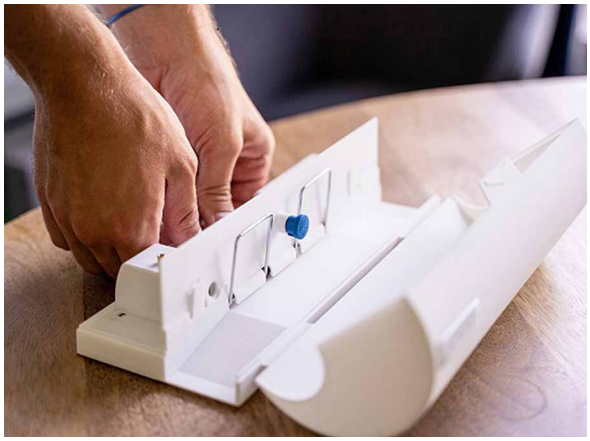
2.5 Rodenticides and IPM

When it comes to the application of rodenticides, a distinction must be made between **monitoring** and **control** of an infestation.

Some legal provisions apply in the EU when using anticoagulant rodenticides as biocidal products (e. g. in the food industry). Firstly, rodenticides should only be used as part of an integrated pest management (IPM) system, including amongst others, hygiene measures and where possible, physical methods of control. Secondly, the use of rodenticides is prohibited for the prevention of rodent infestation or to monitor rodent activity, unless they are explicitly authorized for permanent baiting in the respective EU Member State. Permanent baiting is however only possible for products containing difenacoum and bromadiolone, at sites with a high potential for reinvasion when other methods of control have proven insufficient. Certain conditions for permanent baiting may be determined by the member states at national level such as specific requirements for control intervals. Nevertheless, please note that permanent baiting using anticoagulant rodenticides is prohibited in several EU Member States without exceptions.

However, rodenticides may be used indoors and outdoors to control an acute or ongoing infestation with brown or black rats or house mice. In these situations, baiting points must be visited at least once a week. Rodenticides should be placed in the immediate vicinity of places where rodent activity has been previously explored (e. g. travel paths, nesting sites, feedlots, holes, burrows etc.). This means a pre-baiting survey of the infested area and an on-site assessment to identify the rodent species must be undertaken. The assessment has to be carried out prior to the application of anticoagulant rodenticides and must identify the places of rodent activity and determine the likely cause and the extent of the infestation. Consequently, rodenticides may only be used if signs of recent rodent activity have been detected.

Please see also: FAQ on Environmental Risks, Risk Mitigation Measures and Best Practice
https://www.umweltbundesamt.de/publikationen/authorisation-of-anticoagulant-rodenticides-in



Traps are also monitoring products. Combined with allergen-free monitoring products you can do more with the box: monitoring and when rodents are detected, trapping.

2.6 Sustainability and digitisation

Digital tools are used more and more often on-site as well as in planning and documentation activities. They are considered the new state of art tool in the industry, providing greater efficiency and transparency. The market provides multiple tools, so that pest management professionals have the choice to use the best, most efficient and sustainable products and services for their specific challenges.

In recent years, not only digital documentation, but also 24/7 digital systems for boxes, traps and baits with cameras and further innovations have brought improvements in prevention, monitoring and general control programs.

Instead of an infestation not being detected until the next regular visit (e. g. a month later), early warning systems – if properly placed – can detect a pest when it enters the building possibly even in real time. This time can be valuable to prevent breeding, further spreading, damage to property and the spreading of viruses and bacteria. Once installed, these digital solutions can reduce service time, as boxes are self-controlled 24/7. This leaves more time for site analysis, recommendation management, and optimization of the hazard analysis within the IPM program. In addition, cameras and digital monitors can be placed in hard-to-reach places to make sure they are controlled routinely (e. g. false ceilings, closed electricity rooms, ceilings, cable runways etc.). These systems can be applied for sub-ground and above ground pest control.

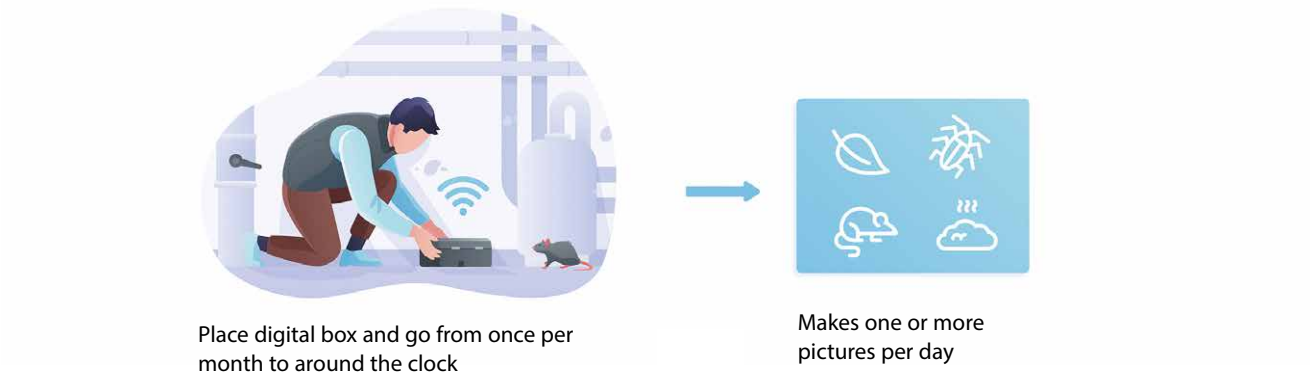
Note: According to experts more than 80 percent of all analogue boxes that are opened are regularly in the same condition as the previous visit. With AI-supported IoT cameras, these routine checks can be avoided and the time used for consulting with the customer.

Pest Presence Surveillance camera with integrated SIM card. The camera can be placed (optionally with a trap or bait) in hard-to-reach locations with 24/7 surveillance for rodents

Stand-alone movement cameras can be used with SIM cards to monitor hard-to-reach places like cable lines, closed rooms or areas and even roof spaces or false ceilings.

FIGURE 2

Flow process of digital monitoring



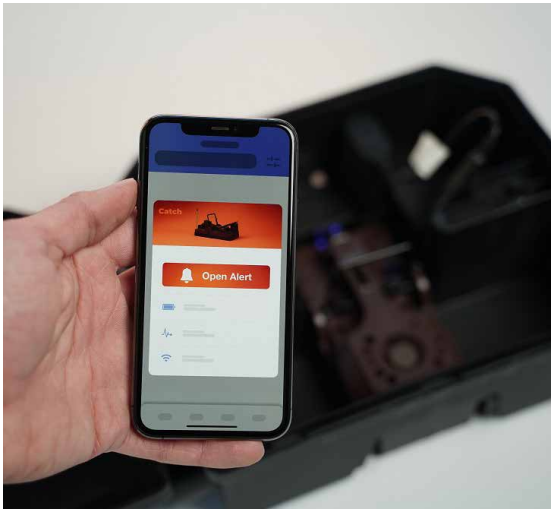
Place digital box and go from once per month to around the clock

Makes one or more pictures per day

Algorithm analyzes pictures over time and once a variation/change appears, humans will be let know

Pest Manager decides whether image is relevant or iterates = AI will get more powerful. No false alerts as the image can always be checked prior to visit

Respective station will be checked for bug/ant/moth/rat/ mouse etc.



Example of an app with which unlimited amount of digital traps and boxes can be controlled within seconds. Also pictures of captured insects or rodents can be uploaded there for better documentation

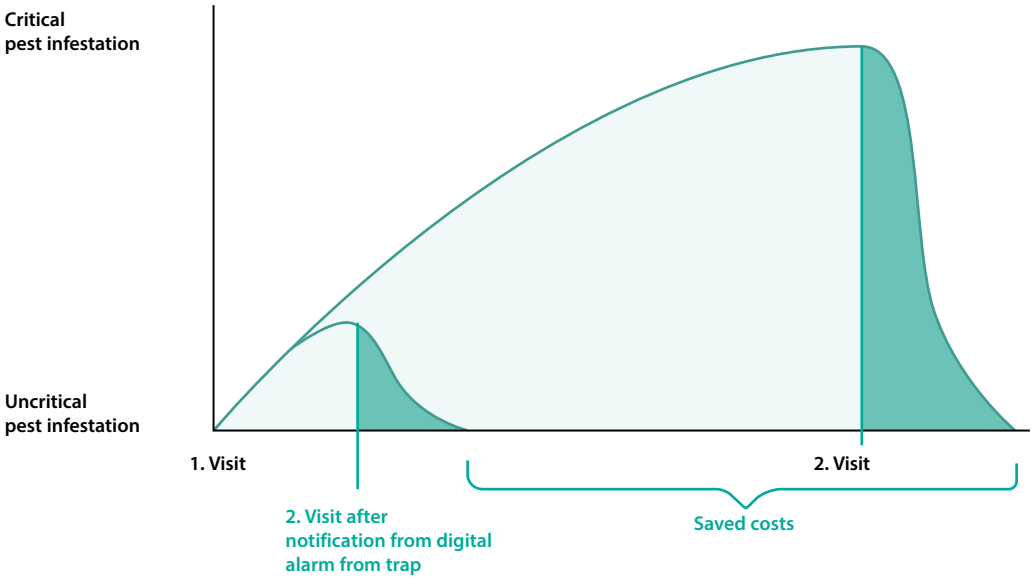
Example of capture of grown rat in break-back trap with waterproof digital 24/7 sensor for outdoor

The conceptual graph (figure 3) shows a traditional (analogue) pest control service scheme in comparison to one that uses digital 24/7 early warning systems. Pest infestations can be brought to light much more quickly, treated a lot earlier and do not go on to grow into substantial problems. It is not only more cost effective but also more compliant in regard to animal welfare and environmental sustainability.

Manufacturing sites can consider and evaluate the potential of digital solutions as a possible option for their site's pest management. As a second step they need to decide together with a pest management professional, how and when these tools can be implemented.

FIGURE 3

Comparison of pest control schemes



The range of tools has expanded and pest management professionals can now use solutions which are animal welfare compliant and approved. These include diverse ecological monitoring products and digital 24/7 surveillance to increase safety as well as efficiency in the management of pests. Based on IPM principles, these products can support sustainability and a robust pest control system.

2.7 IPM – An ongoing process

The ongoing IPM optimisation process can be considered as continuous improvement regarding environmental and IFS Standard requirements. For example, if the current pest control plan involves spraying or placing baits, then it needs to be assessed and optimised towards more ecological and efficient monitoring methods (by whom and until when) as part of an "exit plan". The goal is a controlled environment in which chemical control is only applied as a last resort and not modus operandi.

Sustainability:
It needs to be documented how the pest management program can be further improved in regards to ecological footprint and sustainability. This can be done as an addition to the hazard analysis.

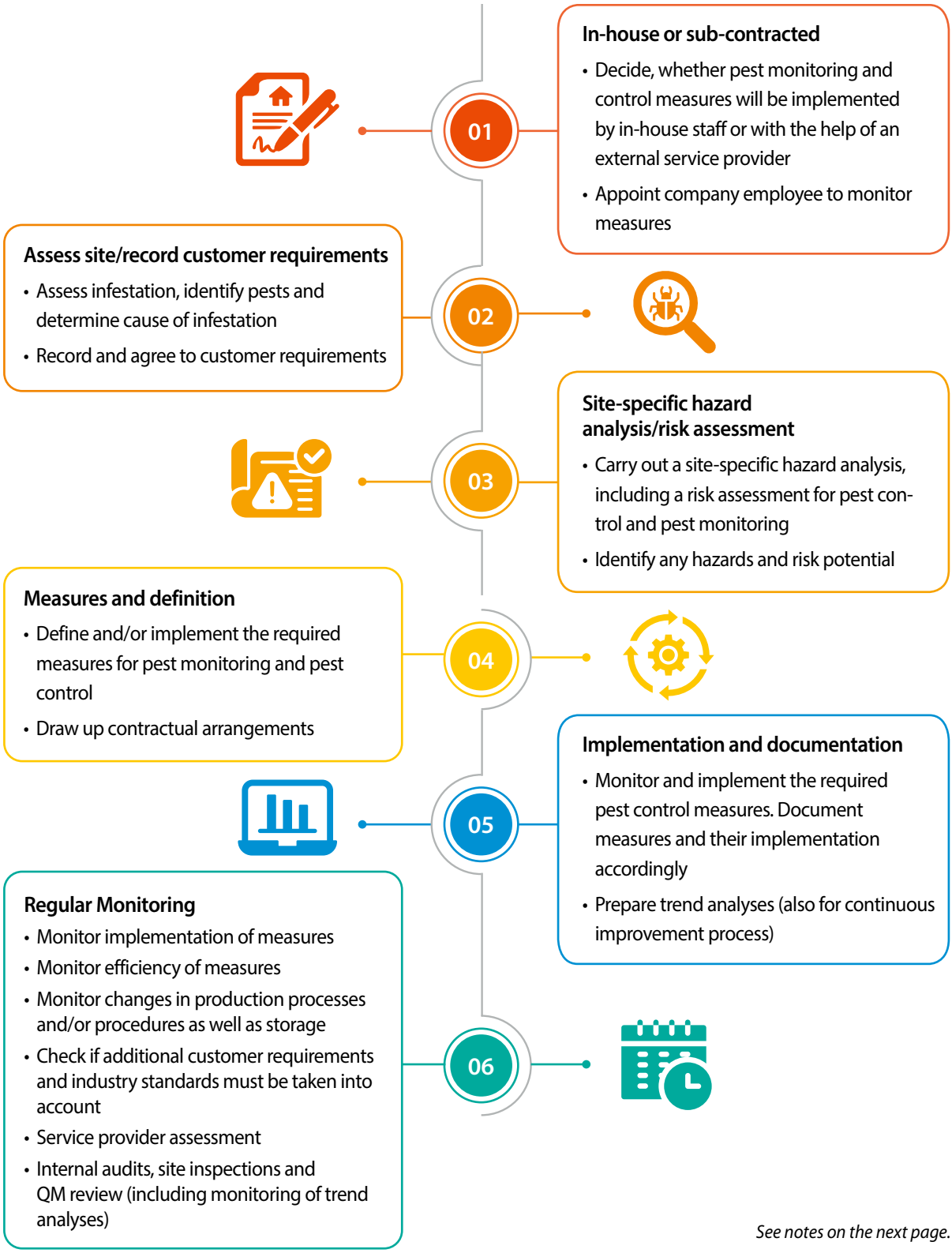
Raptor perch: The installation of perches for birds of prey is an ecological instrument for rodent control around buildings. They attract birds of prey to rest on the perch and enable the hunt for rodents around buildings.

3 Recommended approach for implementing IPM and IFS Requirements

3 RECOMMENDED APPROACH FOR IMPLEMENTING IPM AND IFS REQUIREMENTS

FIGURE 4

Flow process for implementation of IPM



See notes on the next page.

Note on 1: In-house or sub-contracted

Food businesses usually employ a pest management professional as a service provider to implement measures for pest monitoring and control, including preparation of the related documentation. In some cases, such measures are implemented by in-house staff; in this case it must be ensured that the in-house staff, as well as the sub-contracted parties, have the necessary qualifications (see requirement 4.13.3).

Note on 2: Inspect/assess site/record customer requirements

An inspection and assessment of the site is necessary before an individual hazard analysis can be carried out and/or measures for pest monitoring or pest control are implemented. For this purpose, the client's requirements should be requested, where applicable.

Notes on 3: Site-specific hazard analysis/risk assessment

Carry out a site-specific hazard analysis and risk assessment considering products stored and produced. It is important that the comprehensive hazard analysis is shared and agreed between the site and the pest management professional (see also chapter Hazard Analysis below)

Notes on 4: Measures and definition

The results of the hazard analysis and risk assessment must be used to define the measures for pest prevention, monitoring and/or control based on IPM. The services must be specified in a contract.

Notes on 5: Implementation and documentation

All measures must be implemented based on the agreed criteria. This also applies to the documentation. The individual pest's trend analyses show the effectiveness of the measures and must be viewed as part of the continuous improvement process.

Notes on 6: Regular monitoring

One objective of carrying out regular reviews is to check whether all requirements have been implemented and whether they are efficient and sustainable. Another objective is to check whether the production processes and/or procedures have changed and/or any changes have been made e. g. to the storage arrangements, as this can lead to changes in pest monitoring and/or pest control. The service provider assessment is also carried out in this context. An overall review and assessment on the topic of pest control is carried out as part of the annual QM review.

FIGURE 5

Cooperation for hazard analysis

Important Note:
Both the company and the service provider need to perform a risk assessment to decide which actions are necessary (wich pests should be addressed, what kind of baits, frequency of checks, responsible staff, trend analysis, etc.)

4 IFS Requirements – Explanation and interpretation

4 IFS REQUIREMENTS – EXPLANATION AND INTERPRETATION

IFS Food v 7:

4.13.1
Site infrastructure and operations shall be designed and built to prevent pest infestation.

Interpretation:

Every location or area should be evaluated to try to identify critical points that are susceptible to the entry of pests. If cultural controls (s. chapter 2) and a hygiene management has not been implemented, the company and pest management professional need to define how this can be realised (e. g. tearing down a wall, removing the grass, closing holes, hygiene measurements etc.). Documentation on why, how, by whom and the deadline until when the measures will be implemented is necessary.

Even the canal and sewer system should be part of this assessment as rats might use the sub-ground room as a nesting place and consume food above ground within the garbage area or unprotected areas of the site. IPM tools can be used to exclude them as well as traps for control or IoT Cameras for surveillance, whereas biocides would be seen as the last resort in this field.

This requirement is essentially assessed during the interior and exterior site tour.

Audit situation example:

Possible questions:

- → How is it ensured that pests cannot enter the site?
- → Does the concept to prevent pests from entering work and how can you check?

What might be checked: site inspection, training certificates, trend analysis, hazard analysis regarding transport to the outside via open gates/doors

Examples of Major evaluation:

- ⊗ When pests can easily enter the site e. g. wall openings.
- ⊗ Open windows without gauze and heavy infestation in the plant.
- ⊗ Open parked unclean vehicles with birds in them.

4.13.2
The company shall have adequate pest control measures in place which shall be in compliance with local legal requirements and shall take a minimum of the following into account:

- **factory environment (potential pests)**
- **type of raw material /finished products**
- **site plan with area for application (bait map)**
- **constructional designs susceptible for pest activity, such as ceilings, cellars, pipes, corners**
- **identification of the baits on site**
- **responsibilities, in-house/external**
- **agents used and their instructions for use and safety**
- **frequency of inspections**
- **rented storage if applicable.**

The pest control measures shall be based on hazard analysis and assessment of associated risks.

Interpretation:

This requirement of IFS Food Version 7 stipulates that effective pest control is based on the hazard analysis and risk assessment (see example in the Annex 2). The company must take local legal requirements into account and not only EU legislation and/or the legislation of individual Member States. An overview of the relevant legislation and standards can be found in Annex 7.

Factory environment (potential pests)

The factory environment also refers to pests, which can occur in the immediate surrounding of the site (e. g. rural location, open water etc.).

These points are covered in the hazard analysis.

Type of raw material/finished products

Raw materials and finished products can be carriers of pests or be susceptible to certain types of pests. The site should therefore evaluate the following:

- Which potential pests carry these raw materials, products produced or stored?
- Can these products pose a risk or contaminate other products?
- Are these products highly sensitive to pest contamination once they are opened?

Site plan with areas for application (bait map) and identification of baits on site (see also Annex 2, hazard analysis and risk assessment).

The site plan is the vital key to understand and visualize the pest management system. It can be managed better in digital systems, but a professional offline site map can also be sufficient.

It must contain at least:

- all valid areas and locations in the pest management program
- location points of pest control boxes or visual control points
- type of pest control point (e. g. mouse box, moth box, visual control point etc.)

The IFS certified site must ensure that all monitoring points, traps and biocides used on site and in the factory environment are documented in terms of target organism, location and position and/or site. In the case of an acute measure, special legal requirements might apply and must be followed.

Constructional designs susceptible for pest activity, such as ceilings, cellars, pipes, corners

This requirement is a continuation of 4.13.1 (infrastructure of the site). It links the cultural controls (s. chapter 2) and hygiene management to the legal requirements, hazard analysis and risk assessment. The constructional design needs to be considered within the control measures.

Responsibilities, in-house / external

The IFS certified site has the overall responsibility for product safety and for complying with customer specifications/legal requirements. They can outsource tasks to a service provider, however, they remain responsible. Responsibilities and tasks need to be defined and agreed on between the IFS certified site and the service provider. The following breakdown contains a logical distribution of tasks between both parties (see also chapter 3):

IFS certified site

- Define and implement processes and procedures to prevent pest ingress and infestation (e. g. industrial hygiene, operating procedures for flow of goods …)
- Ensure suitable structural preventive measures against pests (e. g. state of doors and gates, drainage system, installations, fly screens …)
- Train relevant employees to use an in-house control system for pest control (e. g. preventive measures and reporting system)
- Document any evidence of pest activity and initiate appropriate measures (link to Issue Management)
- Raise awareness among all employees about pests
- Check recommendations given by the pest management professional and implement measures where required

External service provider or in-house pest management professional

- Identify risks in connection with pests
- Recommend preventive measures and maintain active dialogue with client
- Set up monitoring system, monitor and carry out regular visual inspections
- Measure peaks and trends and discuss control measures with the site
- Carry out professional pest control. This means not only checking the traps/baits but to assess the complete situation within the company and document e. g. cleaning deficiencies which may attract pests
- Document all measures

Agents used and their instructions for use and safety

The regular review of the safety data sheets (e. g. prior to use), which ensure they are complete and up to date, must be clearly documented and the compliance with instructions for use ensured.

A pest management professional should always seek solutions with the lowest animal welfare impact possible as well as being appropriate for efficiently removing pests from the site. Some national governments have approved traps concerning their animal welfare impact and added them to official lists. These lists may not be comprehensive and may not include all available products with an acceptable impact on animal welfare. However, they should be considered whenever possible. Suffering in any case must be held to a minimum (see chapter 2 IPM principles).

The frequency of inspections

Inspection intervals is the maximum time between two visits of examining monitors and/or visual site inspections. To define these, the life cycle of potential pests and their possible adaptation (generations, lack of diapause etc.) must be regarded. Early warning systems including 24/7 surveillance of relevant locations are an effective solution (see chapter 2 digitisation).

In any case, the necessary frequency and schedule for good maintenance of the equipment used to detect and monitor pests must be followed. Powders, dust, sanitation systems, wear of sensitive components or breakage are events that occur continuously in areas of great activity and the pest management professional must act promptly so that the effectiveness of the devices are always optimal. Moreover, having established the presence of pests, pest management professionals need to act using all the necessary strategies following the event, even daily if necessary.

Rented storage if applicable.

Rented facilities must be included in the hazard analysis if the products are under the responsibility of an IFS certified site. Transport activities between different sites and/or rented storage can introduce pests to an otherwise well-controlled site.

Audit situation example:

Possible questions:

- → How is pest control organised?
- → Which pests are controlled?
- → Which kind of baits are used?
- → Is product contamination being prevented by using baits?
- → Who is responsible for pest control?
- → What is the inspection schedule?
- → In case pest activity has been identified, what were the corrective actions?

What might be checked: pest control procedures, pest control chemicals list, bait map

Examples of Major evaluation:

- ⊗ When no pest control is made.
- ⊗ When a product contamination can occur due to unmapped baits.
- ⊗ When a product safety risk occurs due to incorrect use of pest control chemicals or wrongly laid out baits.
- ⊗ If a clear infestation is detected.

4.13.3
Where a company hires a third-party service provider for pest control, all requirements specified above shall be clearly defined in the service contract. A person at the company shall be appointed and trained to monitor the pest control measures. Even if the pest control service is outsourced, responsibilities for the necessary actions (including ongoing supervision of pest control activities) shall remain within the company.

Interpretation:

Qualified staff can identify the expected pests and can apply appropriate control measures. Even if pest control is outsourced to an external service provider, in-house staff shall be trained so that they know which pests could occur, how to identify them, where they could be expected, etc.. This appointed and trained person can improve efficient and swift communication with the service provider and increase the understanding of pest control within the company. IFS does not specify the training for the person responsible at the company – this depends very much on the products and conditions.

The company must prove that the person has been trained in such a way that they can fulfill their monitoring duties accordingly.

Audit situation example:

Possible questions:

- → Is pest control executed by own staff members?
- → Who is responsible for pest control and what kind of training does the responsible person have?
- → Is pest control executed by an external service provider?
- → Does a written contract exist between the service provider and the company?
- → What is the content of the contract?
- → What kind of training does the external service provider have?

What might be checked: training evidence, written contract

Examples of Major evaluation:

- ⊗ If the designated person from the company is not trained and deficiencies are clearly identified which the company should have identified itself.
- ⊗ The company has failed to hire a pest controller.

4.13.4
Pest control inspections and resulting actions shall be documented. Implementation of actions shall be monitored and recorded. Any infestation shall be documented and control measures taken.

Interpretation:

Both parties shall document issues (e.g. hygiene issues, harborage for rodents, cultural or proofing measures, improvement of processes to prevent pests etc.) that can be optimized. They shall always include when and by whom they are planned to be executed and documented in such a way that they are clear, readily accessible and can be archived. Any special rules or legal requirements regarding the documentation or archiving period must also be observed. Prior to implementing the measures, all responsibilities must be clearly defined.

Depending on the structure of the company, escalation steps must be defined in advance. Critical limits for infestation and corrective actions should be defined, each assessment and recommendation by the service provider should be documented even if no actions are taken by mentioning the reason for this.

Inspection shall include control and documentation of findings of every bait/trap/monitoring point or visual control points (if this cannot be done with IoT digital tools). There must be a regular documentation on the development of these "critical points" in the site map, which will lead to the trend analysis and allow a "prediction" for possible future events.

Minimum requirements:

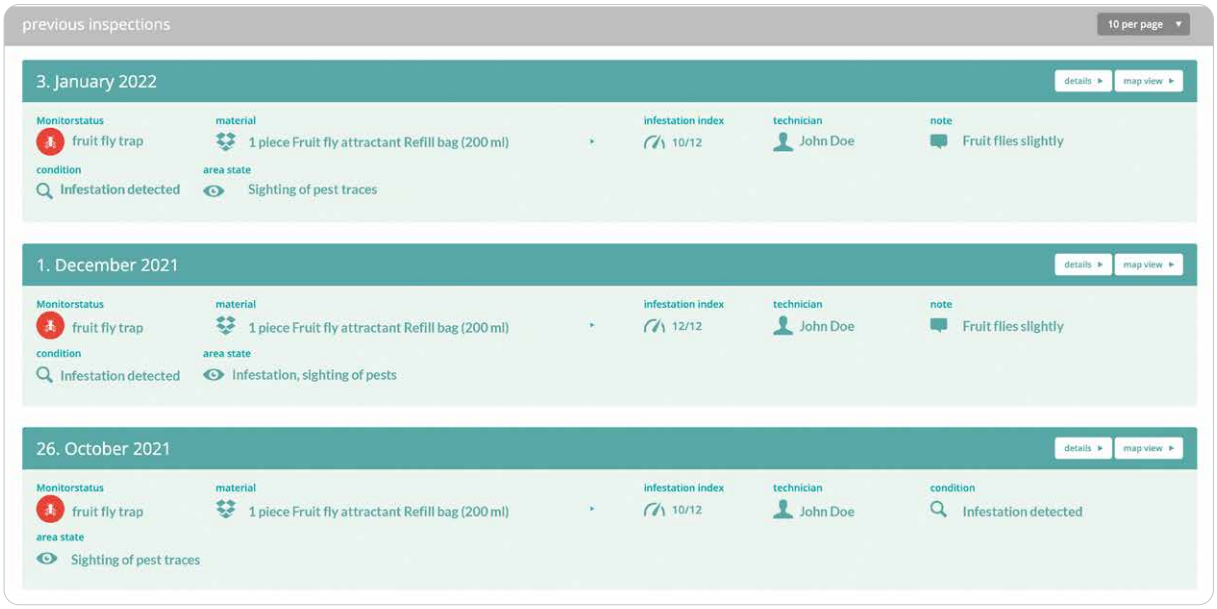
- Exact location
- Photograph and description in case of issue
- Solution approach/recommendation
- Who will resolve the issue: either pest operator or site management?
- The date which it shall be resolved by (dependent on severity). If there is a deadline, an explanation shall be provided and documented
- When using pest control products: target organism, application method, product name, quantity applied, active ingredient, concentration

A good communication between both parties is a key element

The documentation may be prepared on paper, but it is recommended to evaluate dynamic electronic solutions that have proven to be a good aid to management and assessment situations.

FIGURE 6

Example of documentation of pest management actions per single control point



Audit situation example:

Possible questions:

- → Where are inspections and resulting corrective actions documented?
- → Are documents signed and dated by both parties?
- → Which corrective actions were executed lately?

What might be checked: inspection results

Examples of Major evaluation:

- ⊗ When inspections are not documented
- ⊗ If the inspections are not carried out and infestation is present in the plant.
- ⊗ If the inspection reports are demonstrably incorrectly completed.
- ⊗ Special measures are not documented and an improvement of the situation is not evident.

Note: Failure to implement corrective actions may also result in KO rating for requirement 5.11.2.

4.13.5
Baits, traps and insect exterminators shall be fully functioning, sufficient in number, designed for purpose, placed in appropriate positions and used in a way that avoids any contamination risks.

Interpretation:

The "sufficient number" will depend on the type of pest and building structure (e.g., wall edges, openings, or pest entry points) or bait effectiveness (e.g., UV light, pheromone coverage) and/or the radius in which the monitored or controlled pests are active.

Electronic fly killer with glue board

Pest control equipment can pose a contamination risk, e.g. pesticide ingredients, allergens, foreign matter, pests, parts of pests or pest excrement. It shall therefore be designed, installed or located in a way to minimize any risk of contamination: e.g. use fixed baits, avoid placing devices directly over areas in which open food is handled, use collecting trays and double chamber systems and glass breakage protection.

Electric fly killers **with electric grids** should be avoided as the killed insect parts can be exposed and catapulted by up to a radius of 5m distance. This can contaminate products, stored goods, fresh foods or raw-materials and others.

Electronic fly killers with glue boards should be used instead. These capture pest insects just as effectively and allow a thorough analysis during service or via a connected camera and algorithms (optional). The pest management professional can then decide whether the insect poses an increased risk to the site and requires direct treatment within the IPM or whether it's been a "normal" low risk sighting according to the risk chart that the pest controller has completed with the site management or quality management.

Audit situation example:

Possible questions:

- → Where are electrical fly killers installed?
- → Are all fly killers properly connected?
- → How often are live traps checked?
- → How often are impact traps checked?
- → When and how often are the tubes in the insect killers changed?

What might be checked: fly killer map, bait map, on-site inspection

Examples of Major evaluation:

- ⊗ When fly killers are positioned in such a way that flies can fall directly on products
- ⊗ Baited traps are inappropriate and pose a risk to product safety.
- ⊗ Killed rodents are not promptly removed from the traps.

4.13.6
Incoming deliveries shall be inspected on arrival for the presence of pests. Any findings shall be recorded.

Interpretation:

Hazard- or risk-oriented inspections should take additional information into account (e. g. type and specification of raw materials, complaints, statistics). Appropriate procedures for the deliveries should be applied, like visual inspection, acoustic inspection, quarantine of incoming goods, if required).

See also preventive measures above and chapter 2.3 on prevention.

Inspection of incoming deliveries (example)

Audit situation example:

Possible questions:

- → Are incoming goods inspected for pest contamination?
- → Where is this documented?
- → Is pest presence documented?
- → What control measures are taken when pests are found?
- → Where are these control measures documented?

What might be checked: corrective actions, incoming goods inspection and -documents

Examples of Major evaluation:

- ⊗ When incoming goods are not inspected for pest presence and an uncontrolled invasion ensues.

4.13.7
The effectiveness of the pest control measures shall be monitored, including trend analysis, to allow timely appropriate actions. Records of this monitoring shall be available.

Interpretation:

Medium and long-term development of individual pests is monitored using records of previous inspections and other documentation. The aim of the trend analysis is:

- to prevent the occurrence and severity of the infestation in the medium and long term by regularly analyzing and monitoring results and occurrence of infestation,
- to reduce the duration of control measures necessary for eradication,
- to keep the occurrence of pests at a non-critical level.

The following records shall be available:

- Deadlines for measures
- Result, resolution by whom
- Further necessary measures

Audit situation example:

Possible questions:

- → How often is a trend analysis performed?
- → How was the trend analysis evaluated?
- → What measures were derived from the trend analysis?
- → Has the effectiveness of the pest control measures been evaluated?

What might be checked: trend analysis, assessment of pest control measures

Examples of Major evaluation:

- ⊗ If no evaluation of the trend analysis has been made and there is a permanent infestation or the situation on site has significantly worsened and measures would be urgently required.

Further requirements of IFS Food version 7 for pest monitoring and control – Explanation and interpretation

4.13.7
The effectiveness of the pest control measures shall be monitored, including trend analysis, to allow timely appropriate actions. Records of this monitoring shall be available.

Disposal of waste water and cleaning of the drainage has to occur in intervals shorter than the life cycle of expected pests.

4.9.4.2
Where false ceilings are used, access to the vacant area shall be provided to facilitate cleaning, maintenance and inspection for pest control.

It is not enough to assess the non-presence of pests only once, instead continuous monitoring should be implemented as very small gaps or even a rough frontage could be enough to enable an infestation of pests. Every part of the production site or storage area which is not under frequent monitoring and/or control could pose a risk for pest infestation. A pest problem might only become visible after it has become established.

4.9.5.3
Where windows and roof glazing are designed to be opened for ventilation purposes, they shall be fitted with easily removable, good condition pest screens or other measures to avoid any contamination.

4.9.6.2 External doors and gates shall be constructed to prevent the access of pests; they shall be self-closing, unless non-essentiality is justified by risk assessment.

4.15.1*
The conditions inside the vehicles, such as:

- **absence of strange smells**
- **high dust load**
- **adverse humidity**
- **pests**
- **mould**

shall be checked before loading and be documented to ensure compliance with the specified conditions.

4.15.6
The loading / unloading areas shall be appropriate for their intended use. They shall be constructed in a way that:

- **the risks of pest intake are mitigated**
- **products are protected from adverse weather conditions**
- **accumulation of waste is avoided**
- **condensation and growth of mould are prevented**
- **cleaning can be easily undertaken.**

5 Annexes

ANNEX 1: IFS PEST CONTROL REQUIREMENTS IN OTHER IFS STANDARDS

The requirements for pest control are most comprehensively addressed in IFS Food due to the handling of open products and the direct impact this has on food safety. Depending on the scope of other IFS Standards or Global Market Programs, the requirements are similar or adapted to the respective area of application. The basic principles described in this guideline apply to all companies and the interpretation of individual requirements can be transferred accordingly.

IFS HPC

The requirements for pest monitoring and control of the HPC are largely identical to those of IFS Food v 7. There is no explicit separate requirement for infrastructure and prevention of pest infestation in HPC (equivalent to 4.13.1. in Food), which is based on the non-food character of the products. The requirements for infrastructure are sufficiently considered within the other requirements of chapter 4.13.

IFS PACsecure

The requirement for pest monitoring and control in IFS PACsecure v2 are identical to IFS Food v7.

IFS Wholesale/Cash & Carry

The IFS Wholesale/Cash & Carry also relates to food processing and handling. The requirements are therefore similar to ones from the IFS Food Standard and the interpretation can be transferred.

IFS Logistics

The requirements for pest monitoring and control in IFS Logistics are similar to those of IFS Food v 7. Within IFS Logistics v2.3 it is not yet necessary to appoint a company employee to monitor the pest control measures but this will be required in IFS Logistics v3. Further alignments in wording and content have been made to improve the useability and applicability of IFS Logistics v3.

IFS Broker

The IFS Broker Standard has no specific requirements dedicated to pest control, since there is no physical handling of the product under this IFS Standard. Only within chapter 4.4. (Purchasing) are pest monitoring and control part of the supplier monitoring and approval procedures.

IFS Global Markets Food

The IFS Global Market Food Program is intended to support small and/or less developed businesses in the development of their food safety management systems and to take the first step towards the implementation of the IFS Food Standard. The relevant requirements for pest monitoring and control are therefore currently less demanding in version 2. Nevertheless, pest monitoring and control is part of GMP and in future the IFS Global Market v3 requirements will be more closely aligned with the IFS Food v7 Standard.

ANNEX 2: SITE SPECIFIC HAZARD ANALYSIS AND RISK ASSESSMENT

The pest control measures shall be based on hazard analysis and assessment of associated risks.

A hazard analysis including an appropriate risk assessment must be carried out as part of and prior to the pest control plan.

To ensure that pest monitoring effectively eliminates risks posed by infestations, a regular review and reassessment of the monitoring measures is required, taking into account the following:

- location (e. g. warehouses, production, staff rooms, offices, etc.)
- protective measures and preventive measures (e. g. door brush, fitting collars where pipes pass through walls, insect exterminators, specifications and inspection of incoming goods, staff training)
- means of control within the IPM scheme
- type of monitored pests
- monitoring cycle
- (digital) documentation

(See also below table 'Risk assessment')

To assess effectiveness, existing data must be regularly evaluated and taken into account (e. g. trend analyses, complaints statistics, inspections of incoming goods, raw material origin and kind of raw material, intermediate storage, outsourced processes). Based on this information, the required measures are taken as part of the continuous improvement process.

The documentation of these measures should be within the „comply or explain" methodology: express what will be done to reach these goals, how, by whom and until when. The same principle is applied to all categories of the IPM pyramid: physical and mechanical measures, biological or chemical control.

Important note: both the company and the service provider need to perform a mutual risk assessment in advance to decide which actions are necessary: which pest should be addressed, what kind of baits, frequency of checks, responsible staff, etc., see also figure 5, S. 29 "Cooperation for hazard analysis".

The service provider must take over the risk assessment related to their specific skills, e. g. a structural and managerial assessment of the site in order to plan the most suitable system.

Risk assessment: Probability and severity, analysed for each location within the site

FIGURE 7

Example of a risk assessment

		Probability		
		rare	possible	likely
Severity	high	3	4	4
	medium	2	3	4
	low	1	2	3

	Severity (evaluation based on the expected damage)
Low	No damage is caused, not noticeable
Medium	Damage occurs (e. g. to goods), no risk to humans (e. g. through transmission of disease).
High	Risk to humans (e. g. through transmission of disease).

	Probability (evaluation based on trend analyses, reports, etc.)
Rare	Does not occur or is very unlikely
Possible	May occur, has already happened
Likely	occurs frequently, has already happened several times/frequently

Risk level	Measures
1	No measures required
2	Measures to be carried out periodically or on a case-by-case basis (e. g. sealing, cavity sealing)
3	General control measures required (e. g. hygiene program, cleaning, regular monitoring-/control measures)
4	Depending on the situation, specific measures are required

The risk assessment always takes the probability and the severity of pest occurrence into account. The table shows an example for the Severity/Probability Matrix (SPM). The SPM shall be the basis for each location within the site.

A location can be a warehouse, production, staff rooms, offices, cellar, roof, exterior and even more. Dependent on the complexity of the buildings, this needs to be set in cooperation with the pest management professional and the responsible person on site. Small sites might have just one area / location, but large sites need a separate location-based management of pests and hence separate evaluations and analysis within the SPM principle.

Each location/area shall have at least:

- definition of area/location
- service intervals per year
- pests that can occur in that location (e. g. flying-, crawling insects, mice, rats, birds)
- indicator system (e. g. visual control point, bait box, trap, digital 24/7 system)
- trap box quantity altogether

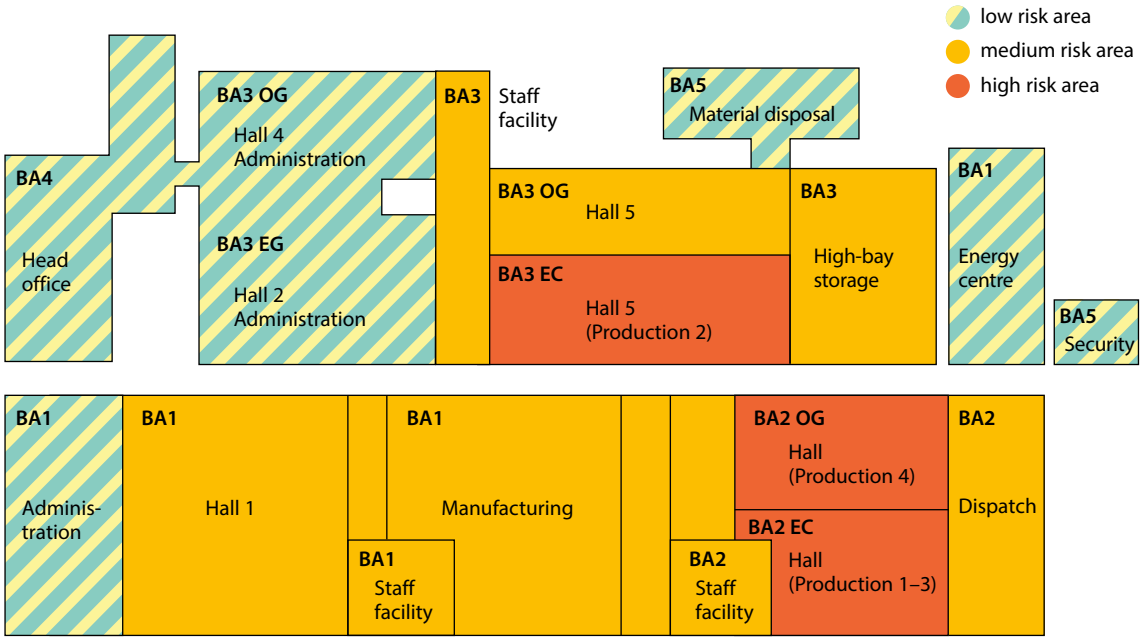
FIGURE 8

Example of a location-based management:

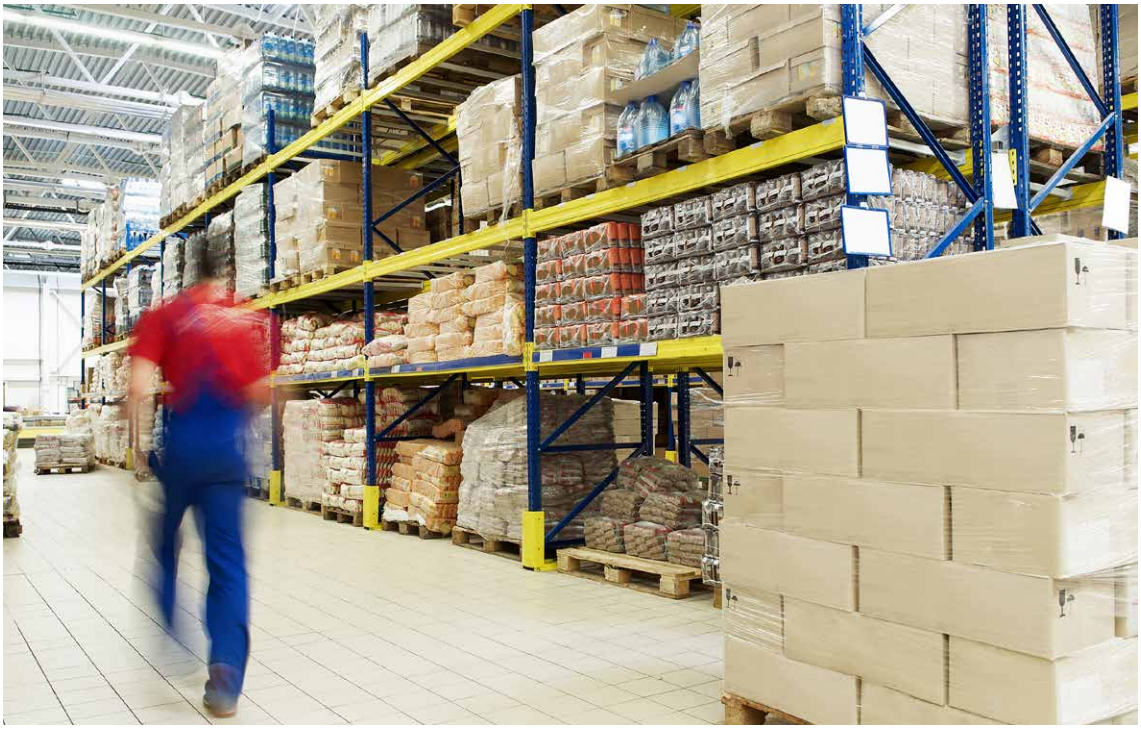
Scope	Monitoring by: digital impact traps, sticky traps against crawling and flying insects Control by: digital traps, sticky traps against crawling and flying insects			
Area	**Intervals per year**	**Pest**	**Indicator system**	**Number of traps in the whole plant**
Exterior	6	Rodents: rats, mice	Digital rat trap and visual control	29
Indoor	6	Rodents: mice	Monitoring stations	57
Indoor	6	Cockroaches	Insect detector and visual control	71
Indoor	Always during regular visit	Food moths no monitoring	Visual control, a recommendation will be made if necessary	0
Indoor	4	Flying insects	UV devices and visual control	13
Indoor	Always during regular visit	Beetles no monitoring	Visual control, a recommendation will be made if necessary	0
Indoor	Always during regular visit	Other storage pests no monitoring	Visual control, a recommendation will be made if necessary	0
Indoor and exterior	Always during regular visit	Birds	Visual control, a recommendation will be made if necessary	0

FIGURE 9

Examples of a location-based plan



This example shows a site plan for a mid-sized site. A fire escape plan, or a plan, sketched by computer or hand (as long as it is readable) can be sufficient.



Example of risk assessment of a whole area with all pests and types

Note: This assessment is quite extensive and detailed. For smaller companies the risk assessment can be shorter.

FIGURE 10

Example of a risk assessment of a whole area with different pests (1)

Description of the risk assessment based on the hazard analysis		Probability		
		rare	possible	likely
Severity	high	3	4	4
	medium	2	3	4
	low	1	2	3

Pest	Hazard	Probability	Severity	Risk level	Measures	Responsibilities	Interval
Pest rodent	stay in the outdoor area	high	low	**3**	no storage outside	company	always
Pest rodent	ingress into the building	low	high	**3**	regular inspections of the structural substance, sealing measures if necessary. Monitoring and control	technician if applicable company	Service once, always
Pest rodent	bringing into the building	medium	high	**4**	incoming goods inspection, immediate disposal of returns and waste, monitoring and control	company	always
Birds	ingress into the building	low	high	**3**	check for abnormalities at the service	technician	Service
Birds	bringing into the building	low	high	**3**	incoming goods inspection	company	always
Birds	internal pest occurrence due to e.g. neglected lockers, drains, dishwasher etc.	low	high	**3**	specifications for pest control, acceptance of methods by the pest management officer	technician	Service
Birds	contamination through pest control method (equipment and products)	low	high	**3**	check for abnormalities during the service	technician	Service
Beetles	ingress into the building	low	high	**3**	incoming goods inspection	technician	Service
Beetles	bringing into the building	medium	high	**4**	check for abnormalities during the service	company	always
Beetles	Internal pest occurrence due to e.g. neglected lockers, drains, dishwasher etc.	low	high	**3**	check for abnormalities during the service	technician	Service
Beetles	contamination through pest control method (equipment and products)	low	high	**3**	specifications for pest control, acceptance of methods by the pest management officer	technician	Service
Beetles	stay in the outdoor area	low	low	**3**	no storage outside	company	always

FIGURE 11

Example of a risk assessment of a whole area with different pests (2)

Description of the risk assessment based on the hazard analysis		Probability		
		rare	possible	likely
Severity	high	3	4	4
	medium	2	3	4
	low	1	2	3

Pest	Hazard	Proba-bility	Severity	Risk level	Measures	Respon-sibilities	Interval
Flying insects	internal pest occur-rence due to e. g. neglected lockers, drains, dishwasher etc.	low	high	3	check for abnormalities at the service	technician	Service
Flying insects	contamination through pest control method (equipment and products)	low	medium	3	specifications for pest control, acceptance of methods by the pest management officer	technician	Service
Flying insects	internal pest occur-rence due to e. g. neglected lockers, drains, dishwasher etc.	high	low	4	no storage outside	company	always
Flying insects	ingress into the building	low	high	3	gates and doors closed when not in use	company	always
Flying insects	bringing into the building	low	high	3	Incoming goods inspection	company	always
Insects	internal pest occur-rence due to e.g. neglected lockers, drains, dishwasher etc.	low	high	3	check for abnormalities during the service	technician	Service
Insects	ingress into the building	low	high	3	check for abnormalities during the service	technician	Service
Insects	ingress into the building	low	high	3	Incoming goods inspection	company	Service
Insects	contamination through pest control method (equipment and products)	low	high	4	specifications for pest con-trol, accepat nce of meht ods by the pest management officer	technician	Service
Insects	stay in the outdoor area	high	low	3	no storage outside	company	always

- Each location should define pest management measures based on IPM. The complete analysis and assessment should clarify how pest management can be carried out efficiently.
- A risk assessment needs to be updated regularly. It shall include the probability of occurrence and the associated severity for the various areas and locations.
- Documentation on how the pest management program can be further improved in regards of ecological footprint needs to be provided. This can be done as an addition to the hazard analysis (a simple statement per area about the improvements can be sufficient).
- IPM applied in a sustainable environment can measurably reduce the likelihood of pest occurrence, while the severity often remains the same. By improving the variable "probability" over time, the site and the pest management professional can gradually improve the overall pest prevention, monitoring and control program and fewer pest problems can be expected.
- If the current pest control plan is spraying or placing bait, then it needs to be assessed and optimized towards more ecological and efficient means of monitoring (by whom and until when) within an „exit plan" scheme. The goal is a controlled environment in which chemical control is only the last resort and not modus operandi
- A regular assessment of possible issues concerning facility maintenance and sanitation should be done jointly including both, service provider and site representative.

ANNEX 3: NETWORK AND TRANSMISSION STANDARDS

The following chart provides an overview of the various IoT (Internet of Things) standards and can act as an aid to explain which standard is safe and secure and which might not be the preferred choice for IFS clients. It is also proposed to specify the criteria for the management of sensitive data (for example according to ISO 27001 to meet the needs of the GDPR (EU Reg. 2016/679).

This document can be used as a guideline to review offers or ask specific questions on the standards offered.

FIGURE 12

Transmission and network standards (as example)

	Recommended	Distance	Energy consumption	Advantages	Disadvantages	Areas of application
Bluetooth	no	2–5 m	very low	low costs	low range, low security, gateway required	private households
Long Range ShortRange 868 Mhz	yes	50 m – 2 km	very low	secure infrastructure solution with repeaters and gateways, secure, private network, easy to set up, long battery fife	Infrastructure (higher effort than e. g. GSM/4G)	unlimited
EnOcean	yes	50 m – 2 km	very good (no battery needed)	secure infrastructure solution with repeaters and gateways, secure, private network, and good, easy set-up battery life and millions of home automation applications worklwide	medium range, but can be extended	unlimited
GSM/LTE (2G/3G/4G)	yes	99% coverage of the world	good	very safe, very easy to set up	SIM costs	unlimited
NB-IoT/ Cat-M	yes	99% coverage of the world	good	very safe, very easy to set-up Unique: better signals through walls. The future standard of the IoT.	SIM costs	unlimited
WLAN	no	3 – 10 m	high energy consumption	large data can be sent (not necessary for Pest Control)	low range, insecure networks offer loopholes for hacking software (virus), dependence on the customer (password, etc.)	private households
LoRaWan/ Sigfox	no	50 m – 2 km	good	long range	low security, not scalable, network coverage insecure, decentralised solution for hobby use	not recommended

excellent good sufficient insufficient

ANNEX 4: TRAINING AND QUALIFICATION REQUIREMENTS

The training and qualification requirements for pest management professionals and corresponding activity limitations are generally defined by national specifications. Where national laws or national association training courses apply, certificated trained professional operators are preferred. Moreover, in-house staff should acquire suitable training and the qualifications must be appropriate for the activities performed.

Evidence of this can be provided through proof of qualification for in-house staff or through necessary confirmation from a pest control contractor (e. g. specifications, certificates or separate confirmation).

IFS certified site – appointed person at the company:

IFS does not specify the training for the appointed person in the IFS certified site, which shall monitor the pest control measures. The IFS certified site is responsible for pest control and must decide what training is useful and necessary for the designated person.

The person at the company should have at minimum knowledge about:

1. Site infrastructure, susceptible areas for pest activity
2. Materials susceptible for pest activity (from raw material to the final products incl. packaging material)
3. Bait map
4. Control measures (incl. incoming deliveries regarding pests)
5. Trend analysis, actions taken and timelines
6. Documentation and records incl. the responsibility to have access to these

ANNEX 5: CONTRACT MANAGEMENT (PURSUANT TO 4.13.3)

The food business operator must deal with issues relating to pest monitoring and pest control or appoint an external pest control company for this task (see 4.13.3).

The terms for appointing an external company according to IFS must be set out in a contract. This must be drawn up in writing, informally, to ensure transparency and define the scope of services. A contract should not only contain a precise list of the contracting parties' obligations but, additionally, (also) set out the cooperation of the parties as well as the processes and procedures and their documentation.

It must contain, for example: the services to be performed by the client and contractor, rules regarding information exchange, obligations of each party to cooperate, conduct within the company as well as clear instructions in case of emergency (contactability, response times etc.).

The contract should be worded in such a way that any subsequent questions and uncertainty regarding pest control and monitoring in general can be answered.

Depending on the scope of the points to be addressed and to make it easier to amend the contract, the use of annexes is often recommended. Please note that the main text in the contract must clearly refer to the annex(es). The annexes can contain more specific points, for example specifications and the corresponding terms and conditions or an overview of the sites covered by the contract, etc.

The following overview contains a list of points that should be addressed in a contract. It is always recommended to specify these in writing.

FIGURE 13

Contract management (as example)

Points to be addressed in a contract	Explanation	Additional comment
Parties	Clarify and define contractual partners	
Preamble	Clarify the aim of the pest monitoring and control	
Legal framework/ safeguard	Ensure compliance with relevant laws and regulations, if applicable	
Hazard analysis – specific to site, product and pest	Method, frequency and scope of the hazard analysis incl. expected pests, site conditions (surroundings) and products handled on site.	Ensure the achievement of golals.
Specifications and terms	Services provided by pest management professional and IFS certified site regarding information exchange, documentation, obligations of cooperation (e.g. access to productions, instruction for emergencies), etc. Ensure legal requirements for education of pest management professional are fulfilled.	Clear delegation of responsibilities and compliance with customer requirements
Contract term and notice period	Handling of company-specific documents and general confidentiality between both parties	
Confidentiality	Period for fulfilling the contractual obligations	
Key figures/ performance data	Specify relevant key figures/performance data for the IFS certified site and its in-house monitoring system (incl. trend analysis). Specify in which form this data is provided	Ensure service is provided as agreed and measures appropriate
Liability	Insurance coverage (e.g. public liability insurance), liability for non-fulfillement of agreed services as protection against entrepreneurial risks	

ANNEX 6: SERVICE PROVIDER ASSESSMENT

The IFS Standards call for a general service provider assessment. This includes any pest control measures, if these are provided as an external service. The Standard does not describe any special methods for the assessment of pest control technicians (see also 4.4 purchasing requirements IFS Food 7).

Requirements for external pest management:

Any external pest control is based on a comprehensive inspection of the site and its surroundings as well as on a root cause and hazard analysis. Taking into account the legal framework, these analyses form the basis for the pest control plan and the written offer, which also describes the hazards, safety measures and obligations of the client.

Once the order has been placed, the pest control plan must be implemented and documented in a report for the client. In addition, the client must receive confirmation of the effectiveness of the service and obtain all records of the agents used and where they were used, including a trend analysis.

To support the service provider assessment, the following standards are available in the market:

ISO 9001	Quality management systems – Requirements
DIN 10523	Food hygiene – Pest control in the food sector
DIN EN 16636	Pest management services – Requirements and competences
ISO 22000	Food safety management systems – Requirements for any organization in the food chain
ISO 14001	Environmental management- Qualification tool for the pest management company

Compliance with the standard can be verified through an independent review. This is currently the case for ISO 9001, DIN EN 16636 and EN ISO 22000.

ANNEX 7: LEGAL AND NORMATIVE REQUIREMENTS FOR PEST MONITORING/ PEST CONTROL

By fulfilling the IFS requirements for pest control, all relevant legal requirements must be complied with as a matter of principle. Requirement 4.13.2 specifically requires the food business operator to establish a pest control system that meets local legal requirements.

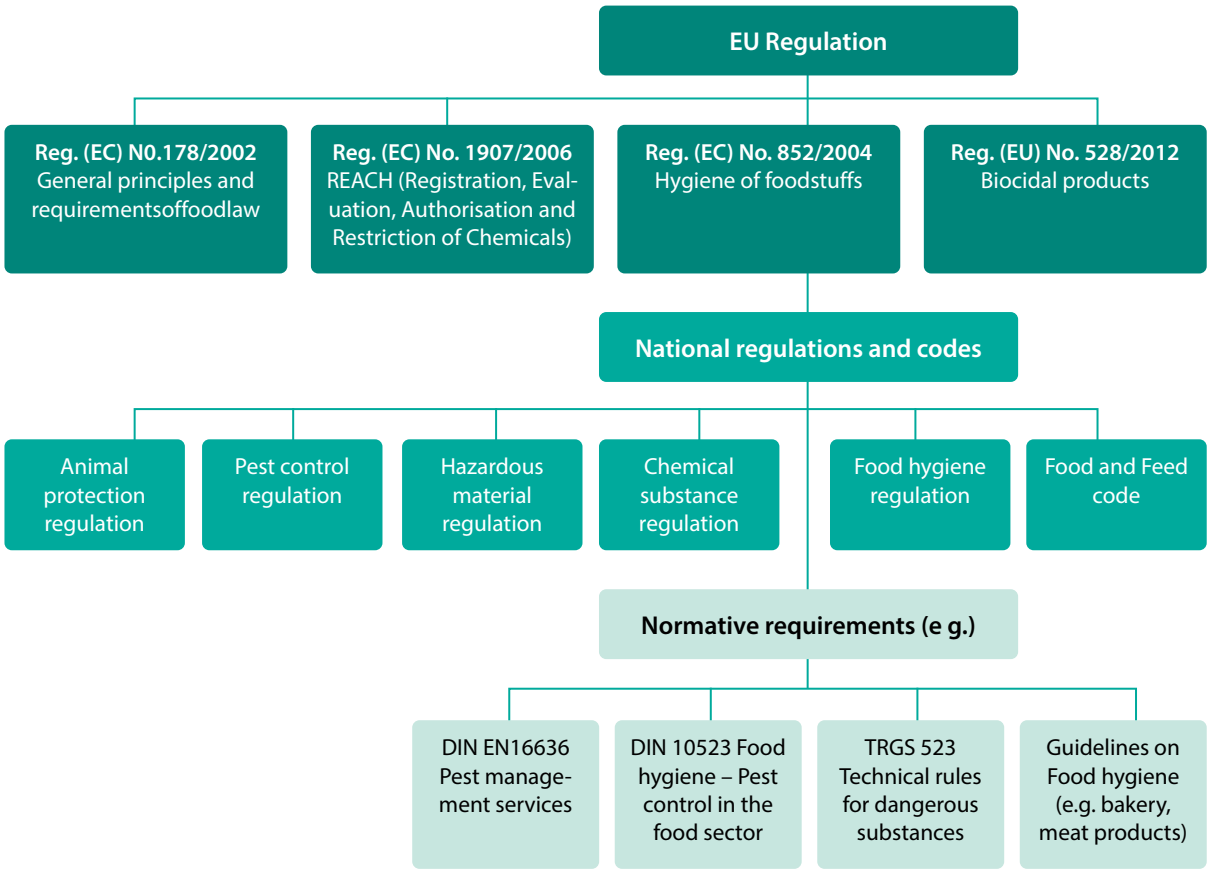
The relevant laws can be found in EU legislation as well as in the national regulations of the individual Member States. Since EU regulations automatically apply in every Member State, they are also reflected in the wording of these provisions.

Normative requirements such as DIN EN 16636 should also be taken into account due to their quasi-legal nature, as they assist users to comply with the legal requirements.

The following chart provides a rough overview of the legal situation regarding pest control and applicable assessment criteria for this topic in Germany.

FIGURE 14

Legal and normative requirements (as example)



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