Qualificação organizacional, energética e de segurança e saúde no trabalho da indústria agroalimentar



Safety and Health at Work Assessment Tool – Bread/Pastry



Cofinanciado por:









Safety and Health at Work Assessment Tool – Bread/Pastry Products User Manual







Introduction

This manual aims to assist the Work Health and Safety Assessment Tool – Bread/Pastry Products user, in carrying out a simplified and easy-to-use occupational risk assessment with a view to adopting risk control solutions at workplaces.

The design of this tool trie to provide an instrument capable of being used without internet access or specific software installation.

In addition to its main purpose, this tool can also be used for workers consultation or training actions, provided as a complement of the other instruments developed within the scope of this project.

The tool is organized in three distinct parts (see Figure 1): the first, where a checklist is filled out, from which a graphical overview is obtained, which will give the overview of the level of risk control (second part). This synthesis of results allows the user to immediately visualize the level of control of the main risks and in which will have to make major interventions. Finally, the third part appears, where a report is generated with solutions, particularized for each one of the risks in which the adoption of measures proves necessary.

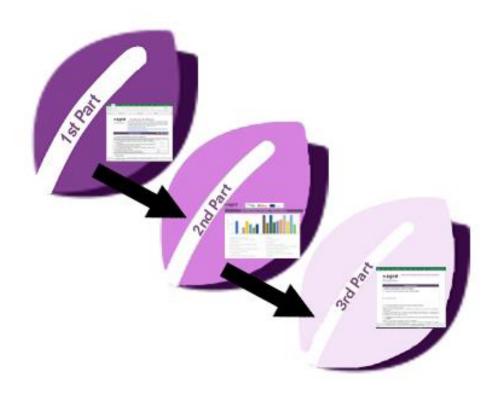


Fig. 1 – Structure of the risk assessment tool.

The use of this tool does not dispense or replace the use of the OiRA tool (Online interactive Risk Assessment) developed within the scope of this project to be used by Bread/Pastry Products Enterprises since this is configured as a tool for "screening" of risk situations, and not as an exhaustive diagnosis. Through the OiRA tool, it will be possible to obtain an adequate risk assessment for micro, small and medium-sized enterprises and also to define an action plan.

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1. Risk Assessment

1.1. Checklist

The tool begins by filling out a checklist (see Fig. 2), which covers 18 dimensions of analysis, namely:

- Management of Safety and Health at Work;
- Workplaces Installations;
- Thermal Environment, Lighting, Noise e Chemicals;
- Psychosocial Risks and Stress;
- Ergonomic Risks;
- · Electrical Risks;
- Safety Management of Machinery and Work Equipment;
- Personal Protective Equipment (PPE);
- Containers Under Pressure;
- Reception and Storage of Primary Materials Stands and Shelves;
- Reception and Storage of Primary Materials Silos;
- Reception and Storage of Primary Materials Conservation Chambers;
- Preparation;
- Use of Gas and Ventilation;
- Oven:
- Finishing and Packaging;
- Storage and Expedition;
- Emergencies.

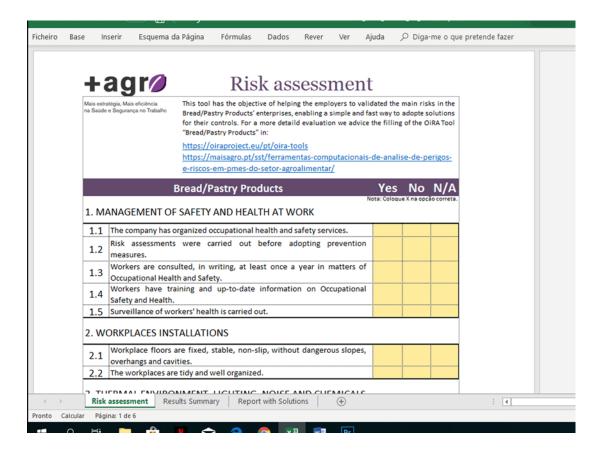


Fig. 2 - Checklist - Risk Assessment tool

For a better understanding of each dimension of analysis, a brief description of the aspects covered by them is presented, seeking to provide a set of information relevant to different types of users (namely employers and workers).

1.1.1. Management of Safety And Health At Work

Safety and health at work are fundamental to guarantee the physical, psychological and health of workers while ensuring the productivity of enterprises.

In this dimension of analysis we intend to approach in a summarized way:

- General principles of prevention;
- Employer and employee general obligations;
- Workers consultation, information and training;
- Work organization and occupational health and safety services activities;
- Workplace Accidents.

1.1.2. Workplaces Installations

Workplaces Installations conditions can influence the health and safety of workers. In this dimension of analysis, the aspects associated with the floors and the organization of the workplaces are discussed.

1.1.3. Thermal Environment, Lighting, Noise And Chemicals

Environmental risks can be caused by physical, chemical or biological agents which, when present in the workplace and above the threshold values, can lead to occupational diseases and contribute to an increase of accidents at work and decreased productivity. In some cases it may also contribute to the occurrence of defects in production, for example, confusing identical patterns and colors.

At this point, aspects related to the following topics will be evaluated:

- Thermal environment and ventilation;
- Lighting;
- Noise;
- Chemicals.

1.1.4. Psychosocial Risks and Stress

Psychosocial risks derive from deficiencies in the design, organization and management of work, as well as from a problematic social context of work, which can have negative psychological, physical and social effects such as work-related stress, exhaustion or depression. Some examples of factors inducing psychosocial risks are:

- Excessive workloads;
- Contradictory requirements and lack of clarity in the definition of functions;
- Lack of participation in decision-making that affects the worker and lack of control over the way he/she performs the work;
- Poor management of organizational changes, job insecurity;
- Ineffective communication, lack of support from bosses and colleagues;
- Psychological or sexual harassment, violence by others;
- Difficult reconciliation of family and professional life.

Concerning stress, it comes when people realize that there is an imbalance between the demands of work and the physical and mental resources they have available to deal with these demands. As examples of stress-inducing factors we can indicate:

- Insufficient time to perform the required work;
- Do not have the emotional and cognitive skills to perform the tasks or functions;
- Lack of personal control;
- Inadequate support;
- Bad relationships between peers;
- Conflict of roles or lack of clarity;
- Violence (verbal or physical) by third parties.

Thus, this dimension of analysis evaluates factors who may induce psychosocial and stress risks.

1.1.5. Ergonomic Risks

Inadequate postures associated with repetitive tasks are often responsible for musculoskeletal-disorders that can cause loss of productivity and workers absence for long periods of time.

Many of the ergonomic hazards can be avoided if the work area is properly sized and suitable equipment is used (height of workplaces and desks, shelves and cabinets, etc.).

Some activities at Bread/Pastry Products enterprises are carried outstanding, require a high body movement or, the use of force or range, requiring special attention.

More information:

https://osha.europa.eu/pt/themes/musculoskeletal-disorders

1.1.6. Electrical Risks

In the Bread Pastry industry, electricity is undoubtedly the most important form of energy used. In fact, silos; mixers; kneading machines; rolling mills; mincers / crushers; slicing bread; electric saws; refrigerators; freezer; cold rooms; ovens; cookers; fryers; dishwashers are examples of machines and electrical equipment present in these industries.

In parallel, the general and localized lighting is also electric.

The main risks associated with the use of electricity are direct and indirect electrical contacts, fire and explosion.

In this dimension of analysis, only the aspects related to the general installation are addressed, and the aspects related to the machines and equipment themselves are approached throughout the tool.

1.1.7. Safety Management of Machinery and Work Equipment

The use of electric machines and equipment, such as mixers; kneading machines; rolling mills; mincers / crushers; slicing bread; electric saws; refrigerators; freezer; cold rooms; silos; ovens; cookers; fryers; dishwashers, may expose the workers to different risks, especially in terms of cuts, entanglements or electrical contacts. The prevention in these cases involves the acquisition of safe machinery and equipment (with CE marking), for their adequate maintenance, guarantee that the safety systems are still installed in the machines and also for the training of the workers in the safe use of these machines and equipment.

All of them carry potential risks to workers, so it is necessary to carry out a correct management of these machines and equipment to prevent accidents at work and occupational diseases.

This dimension of analysis will evaluate the general safety aspects of machines and tools in the workplace. The aspects covered are applicable to all existing machines in the enterprise, which should be the first to control, and then be possible to pass to the specific risks of different machines.

1.1.8. Personal Protective Equipment (PPE)

Personal protective equipment (PPE) should be the last resource to protect the health and integrity of workers.

Before adopting PPE, other protective measures should be adopted:

- Replace what is dangerous so it is safe from danger;
- Use of collective protection equipment (protection of machines and equipment, ...);
- Rotativity of workers.

In this dimension of analysis, it is intended that the enterprise evaluate the adequacy

and use of PPE.

1.1.9. Containers Under Pressure

Some enterprises in the Bread/Pastry Sector use gas under pressure, especially propane gas to power stoves. Equipment that has pressurized fluids are potential bombs that can explode causing a serious material and human damage.

In this context, it is important to analyze the main risk factors associated with the use of gas cylinders, contributing to the adoption of measures to improve working conditions.

1.1.10. Reception and Storage of Primary Materials – Stands and Shelves

Storage systems on stands or shelves are widely used in the industry. However, there may be quite different situations, in terms of height and in terms of load capacity.

The height and load capacity determine the equipment used, namely stairs/ladders or mechanical means, such as manual or electric pallet truck, stacker, among others.

The main risks are associated with the transportation and storage of materials, with special attention to the structures used, the manual handling of loads, the fall of materials and workers falls.

1.1.11. Reception and Storage of Primary Materials – Silos

Silos are infrastructures that can be present in some Enterprises of the Bread/Pastry Sector, serving to store flour.

Because they are enclosed spaces, they are known as confined spaces, and the greatest danger they pose are the explosions resulting from the existence of a lot of accumulated dust.

In addition to the risk of explosion, the silos present other risks, of which we highlight the following:

dust that can cause eye injury or breathing difficulties;

- access to its interior (confined space) and manual handling of loads (silo feed);
- the lack of grounding of the motors;
- inadequate lighting;
- the presence of static electricity;
- the presence of released gases;
- from falls due to faults occurring in the fall equipment inside.

In this dimension of analysis, the safety conditions of the existing silos are evaluated.

1.1.12. Reception and Storage of Primary Materials – Conservation Chambers

When moving the mass and other food products to the cold chambers, workers are subjected to very low temperatures, especially in the negative cold chambers where the temperature can drop to -30°C.

As the extremities of the body are cooled faster than the rest of the body, the fingers (hands and feet), as well as the head (nose, chin and ears), are the parts that suffer most from exposure to cold. Care should be taken to ensure that the skin temperature does not fall below 12°C so that the supply and use of protective clothing appropriate to the cold must be guaranteed.

At the same time, abrupt changes in temperature can cause different diseases, both respiratory, joint and muscular.

Another situation that could lead to consequences that could be serious or even very serious, is a possible imprisonment of the worker inside the cold room.

As with other machines, there are moving parts, such as the fan blades. If those parts are not protected can cause damage to the worker.

The main risks are associated to the transportation and storage of the materials, with special attention to the manual handling of loads, to the fall of materials and workers falls, to the discomfort or thermal stress.

1.1.13. Preparation

Bread/Pastry enterprises have long diversified their offer, offering products other than

traditional ones (bread, dry cakes and fresh pastry), such as fried salted and salted from soft dough and puff pastry, and still, regional confectionery and pre-made meals.

Thus, at this stage of the productive flow, we find several activities that, due to the equipment and utensils used and the associated physical effort, could constitute a risk to the workers' health and safety.

In this context, given the risks associated with them, we can highlight the following tasks:

- · Weighing of ingredients and eliminating packaging;
- Mix and knead;
- Leavening / fermenting the mass;
- · Divide / Weigh / Roll the mass;
- · Tender the mass;
- · Laminate the mass;
- Shaping and cutting the mass;
- Chop / cut / prepare the ingredients for the various fillings;
- · Bake the filling;
- · Cooking meals;
- Forming / Shaping;
- Fry;
- Placing the trays in the cooking trolleys;
- Cleaning and maintenance of work areas, machines, equipment and utensils.

At this stage of preparation, there is the possibility of several risks occurring, which can result for the employee:

- Skin allergic reactions;
- · Respiratory problems and asthma;

- Musculoskeletal pain (in the neck, spine, shoulders, and carpal tunnel syndrome);
- Injuries to tendons;
- Fractures or crushing of the upper limbs by entrapment;
- Polite;
- Burns;
- Hearing Loss;
- Fractures, sprains or dislocations due to falls at the same level.

The organization of risk assessment, at this stage of the production process, will focus on:

- Surfaces and workplans;
- Exposure to ingredients;
- · Work the mass;
- Leavening / fermenting the mass;
- Static work standing;
- Use of hand tools and electric machines and equipment;
- Contact with steam, water and hot fats and also with hot surfaces.

1.1.14. Use of Gas and Ventilation

Almost all of the companies in this sector use gas as a source of energy in the stoves and some of them also in the ovens. The use of gas implies important risks that need to be known and controlled. In order to control the risks of this use, the legislation requires the adoption of safety measures for the installations and equipment that use gas at the beginning of the activity, as well as the periodic inspection of the facilities, which in the case of restaurants must be carried out from 2 in 2 years.

At the same time, legislation relating to the CE marking of equipment using gas implies that they have inoperative flame monitoring devices, which cut off the gas supply automatically in the event of a flame being switched off.

It is important that workers are trained in the gas equipment used, the risks and the preventive measures in the use of gas, so that they can carry out their work safely. At the same time, they should be able to perform simple visual checks to detect obvious faults, such as damaged pipes or fittings, failure of the flame control buttons on the stove, gas smell (leakage). All workers should know what to do in these situations.

1.1.15. Oven

The oven zone is a work area where a set of hazards and associated risks coexist, which are not always properly identified or evaluated.

This is the part of the manufacturing process in which the worker is exposed to higher temperatures than normal, resulting in various risk situations. However, due to the duration of this exposure and the adoption of appropriate safety procedures, existing risks may be eliminated or reduced.

Contact with hot surfaces is another risk associated with the use of ovens, since in case the worker touches an unprotected part of his body, burns may occur.

The high temperatures emitted by the oven at the time of loading / unloading can also cause eye damage.

The use of ovens implies the use of trays and forms, which can be quite heavy, depending on the products to be cooked, which can result in very high physical stresses for the worker.

Existing ovens in the bakery / pastry industry can operate on wood, electricity, gas or pellets, so that workers naturally expose themselves to the risks associated with the use of each of these types of energy.

In the case of wood-fired ovens, in addition to the aforementioned hazards, wood may be projected into the eyes and cut by contact with sharp wood.

Finally, the oven's cleaning, leads to the use of chemicals that can cause damages of diverse nature, and the workers must be informed and protected of the same.

Thus, in this stage of cooking, it is possible to occur several risks, which can result for the worker:

Burns;

- Eye lesions;
- Thermal discomfort;
- Dehydration;
- Muscle and spine pain;
- Nausea and vomiting.

In extreme situations, such as in the event of a fire or explosion, the worker may die.

It is therefore essential that workers know the risks involved in using the oven, as well as the rules for safe use of the oven.

1.1.16. Packaging Area

In this area of the production process, the products are packaged, which can be essentially manual or by using machines, such as the wrapping machine, the labeler or the palletizer.

There may be primary packaging - where the whole or sliced product is packaged - and secondary packaging - where the product is placed in boxes or bags. Then the palletization can be carried out, the boxes being grouped by product and/or customer and placed on pallets for later shipment.

In enterprises with predominantly manual processes, the existing risks are fundamentally associated with the ergonomic conditions of workplaces, such as the height of workplaces, static work carried out on foot or manual handling of loads (bending weight and frequency of movement).

In case the packaging process is eminently carried out using machines, to the risks associated with the ergonomic conditions of the works described above, also add the risks associated with the operation of machines (such as cutting, entrapment or crushing).

In this dimension of analysis, it is important to evaluate the main risk factors associated with existing work plans and machines, contributing to adopting appropriate control behaviors and measures.

1.1.17. Finished Product Storage – Stands and Shelves

The storage may be carried out on shelves or on pallet racks, and the packaging should be done by hand or with equipment intended for this purpose. Thus, according to the way this storage is carried out, there are different risks to which the worker will be subject.

Storage systems on stands or shelves are widely used at an industrial level, but there may be quite different situations, both in terms of height and in terms of load capacity.

The height and load determine the equipment used, namely stairs/ladders or mechanical means, such as manual or electric pallet truck, stacker, among others.

Taking into account these assumptions, there is the possibility of several risks occurring, which can result for the employee:

- Mucoeskeletal pain and lesions;
- Crushing;
- Light and severe injuries.

1.1.18. Finished Product Storage - Conservation Chambers

Regarding storage, some of the manufactured products are packaged and kept in positive or negative cold rooms. Other products are stored at room temperature.

When moving the materials from and to the cold chambers, workers are subjected to very low temperatures, especially in the negative cold chambers where the temperature can drop to -30°C.

1.1.19. Emergencies

Fires and explosions are examples of emergency situations with great destructive power, both in terms of loss of life and the level of material losses.

First of all, enterprises must assess the risks and implement measures that, on the one hand, reduce them and, on the other hand, be prepared to respond in the most appropriate way in an emergency, preserving lives and property.

Preparing to deal with emergency situations can mean the difference between life or death for workers, the reduction of material damage and even safeguarding the continuity of the enterprise.

In a first phase, enterprises should identify the potential emergency situations that may occur in their facilities (eg fire, explosion), and then adapt themselves in terms of human and material resources to deal with such emergency situations. Undoubtedly, the training and continuous information of workers have a key role to play in responding to the emergency.

This dimension of analysis covers fire prevention and fire safety, as well as assesses the level of response to emergency situations.

1.2 Rules for completing the checklist

In order to obtain correct results and to promote the easy use of the available risk assessment tool, there are a number of alerts that are considered important and for which the following explanations are given:

- ✓ Before starting to fill the checklist, the options are all "salmon" or "roasted yellow" (depending on the monitor) and only change to another color when the desired option is set (see Fig. 3). This function lets you check that you have not left any statements to evaluate.
- ✓ When placing a cross (X) in the correct option, all the options in this line change color, passing to a white background, as shown in the figure below:

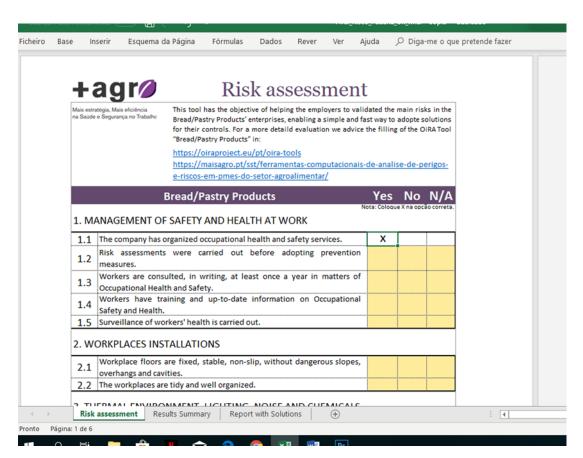


Fig. 3 - Checklist's filling - Choose the correct option with an "X" (cross).

 When placing two or three options for the same assertion, the cells will change color, such as crosses, turning the background pink and the crosses to red color (see Fig. 4):

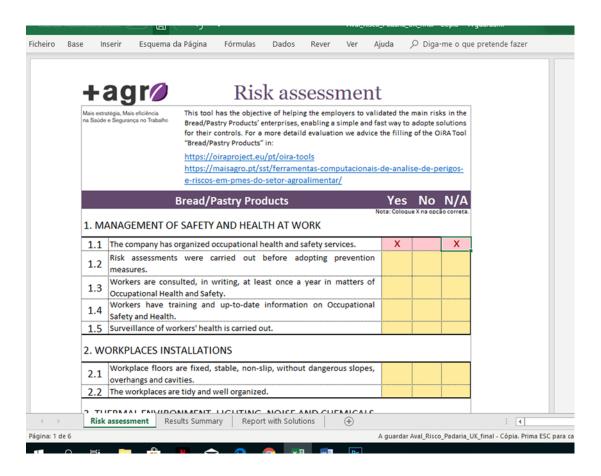


Fig. 4 – Checklist's filling - Error when placing two options at the same time.

When see the pink colored line and the red crosses, the user easily realizes that it should analyze the affirmation again and leave only one option.

- ✓ By filling in the checklist, the user can save the work done so that he can interrupt and resume this activity whenever he wishes. At the end of the checklist, there is a cell that updates the fill date whenever a recording is performed (see Fig. 5), so the user can always know when the file was last updated.
- ✓ In order to ensure that the results obtained for each analysis dimension reflect reality, the user must ensure that he/she responds to all statements, confirming that the option lines are blank with black crosses (see Fig. 5). In some situations, there may be a need to record everything in order to visualize this color change and validate the answers.

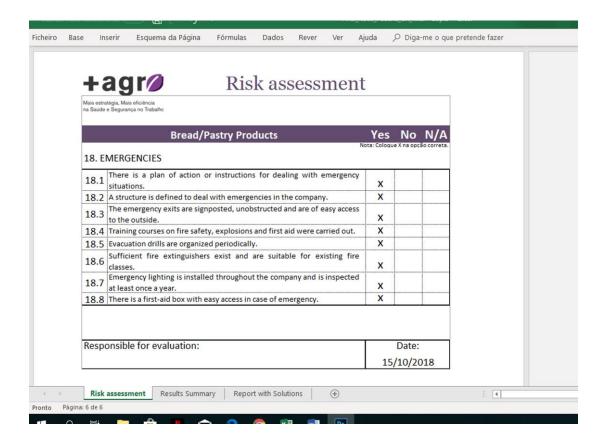


Fig. 5 - Checklist's filling - Date of filling / last recording.

• At the end of the checklist, there is also, beyond the date, a space for the signature of the person responsible for the evaluation (Fig. 5). This document can only be signed after it has been printed.

2. Risk Assessment Results

2.1 Synthesis of results

The synthesis of the results comes after completing the checklist and is presented by means of a 2D bar graph that allows us to quickly verify the enterprises' situation related to the 18 dimensions of analysis proposed, as shown in the following figure:

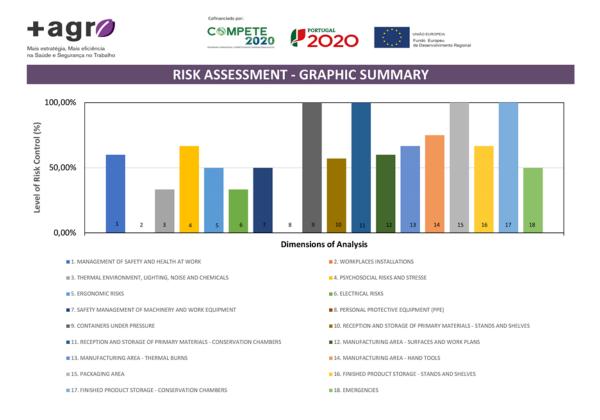


Fig. 6 - Graphical summary of the results - Risk Assessment Tool

In order to know the percentage obtained in each dimension of analysis, the user must place the cursor on the respective column and, thus, obtain the indication of the exact value (Fig. 7):

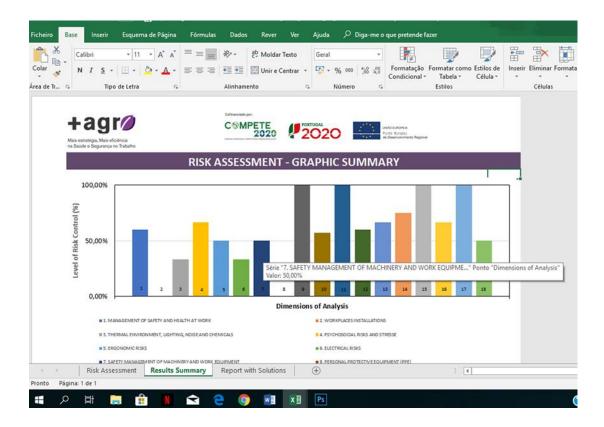


Fig. 7 - Graphical summary of the results - Levels of Risk Control (%).

Reading this graph should allow the user to make several observations:

- 1) In what dimensions of analysis the enterprise is at an adequate risk control level (in the example of Fig. 6 and Fig. 7 these dimensions are at 9 to 13, at 15 and 17);
- 2) In what dimensions of analysis will the enterprise have to make interventions because the risk control is deficient or does not exist (in the example of Fig. 6 and Fig. 7 this situation is registered in all dimensions with values less than 100 %).

In the case of the dimensions of analysis that fall under an adequate risk control situation, the enterprise should be vigilant to ensure that there are no changes that could interfere with current levels of control and to continue to adopt an attitude of improvement to be continued.

For dimensions with values below 100%, it is considered that risk control is not being adequate or efficient, and there is, therefore, a need to promote initiatives conducive to change.

Given that the enterprise may not carry out all necessary interventions

simultaneously, it will be necessary to carry out a cross-analysis of this graph with the solution proposals indicated for each statement in the "Report with Solutions" tab, and then make decisions based on an analytical reflection of the measures.

2.2 Report with solutions

After completing the checklist and careful reading of the graphical summary of the results, the user should consult the "Report with Solutions", in which you can find a set of options that will allow you to control the risk inherent in each statement whose answer fell to the option "No" (see Fig. 8).

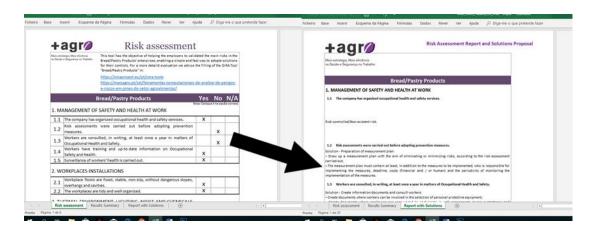


Fig. 8 – Report with Solutions - Proposals for solutions to situations where there is risk.

Thus, the report made available is not an end in itself but a window of opportunity for improving working conditions in the enterprise, by implementing measures that translate into adequate control of risks.

This tool should be used as a "rater" instrument and then the complete "diagnosis" can be made using the OiRA tool designed specifically for the Bread/Pastry Products enterprises.

OiRA tools provide:

- "- A document recording the results of the risk assessment that can be downloaded, edited and printed. This record can be used as a basis for the information to be passed to the persons concerned; for monitoring to assess whether necessary measures have been introduced; for evidence to be produced for supervisory authorities; and for any revision if circumstances change.
- An action plan (that can also be downloaded, edited and printed) focusing on the preventive measures to be implemented, who does what by when, etc.
- An overview of all the risks. This record can be used as a basis for passing information to the people concerned and for monitoring whether or not risks identified and measures to be taken are dealt with properly.
- An overview of the preventive and protective measures to be implemented. This record can be used as a basis for passing information to the people concerned and for monitoring the measures to be implemented in the forthcoming three months." ¹

OiRA tools have periodic updates, thus as changes of legislation, development of new examples of good practice, ensuring that they are always up to date.

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¹ https://oiraproject.eu/pt/oira-faqs

Para mais informações sobre o projeto, contactar através de geral@maisagro.pt ou diretamente os promotores do projeto

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