



MINISTRY
FOR THE ECOLOGICAL TRANSITION AND THE
DEMOGRAPHIC CHALLENGE

SECRETARY OF STATE
FOR THE ENVIRONMENT

DIRECTORATE GENERAL FOR
ENVIRONMENTAL QUALITY AND ASSESSMENT

SECTION 15

USER'S GUIDE

– MODULE FOR THE PREPARATION OF SIMPLIFIED ENVIRONMENTAL RISK MANAGEMENT STUDIES (ESGRA) –



**TECHNICAL COMMISSION OF PREVENTION AND REMEDIATION OF ENVIRONMENTAL
DAMAGES**

INDEX

15. MODULE FOR THE PREPARATION OF SIMPLIFIED ENVIRONMENTAL RISK MANAGEMENT STUDIES (ESGRA).....	- 1 -
15.1. RATIONALE AND METHODOLOGY FOR SIMPLIFIED ENVIRONMENTAL RISK MANAGEMENT STUDIES	- 1 -
15.2. ACCESS TO THE ESGRA MODULE.....	- 2 -
15.3. COMPLETE NEW REPORT	- 4 -
15.3.1. NEW ESGRA REPORT	- 4 -
15.3.2. ESGRA REPORT EVENTS	- 5 -
15.3.3. DETAILS OF THE EVENT.....	- 8 -
15.3.4. ACTIONS TO IMPROVE RISK MANAGEMENT	- 18 -
15.3.5. REPORT COMPLETION	- 21 -
15.3.6. PRINT PROJECT	- 21 -
15.4. REPORT HISTORY	- 22 -

15. MODULE FOR THE PREPARATION OF SIMPLIFIED ENVIRONMENTAL RISK MANAGEMENT STUDIES (ESGRA)

Given the volume of information contained in the document '*SIRMA User's Guide*', and for the purpose of facilitating documentation management, this supplementary document has been prepared for the Module to preparation of Simplified Environmental Risk Management Studies (ESGRA).

15.1. RATIONALE AND METHODOLOGY FOR SIMPLIFIED ENVIRONMENTAL RISK MANAGEMENT STUDIES

The *Simplified Environmental Risk Management Study* (hereinafter ESGRA) is a methodology that aims to provide information on their environmental risks to those operators who are not currently obliged to carry out environmental risk analyses. This information is useful to reduce the consequences or likelihood of occurrence of environmental damage, without the need for a full environmental risk analysis with the scope required by environmental liability regulations. This methodology, developed in 2015, has been computerised through a module in SIRMA that facilitates the development of these studies.

In this way, ESGRA is aimed at those operators who are temporarily exempt from carrying out an environmental risk analysis, i.e. those who are not obliged to provide a financial guarantee. In short, those not included in section a) of Article 37.2 of the Regulation partially implementing Law 26/2007 of 23 October on Environmental Liability.

This section of this Guide focuses on the area of risk management, prevention and avoidance of further damage in order to assist operators in this respect. This approach aims to encourage the involvement and action of operators before environmental damage occurs, adopting the maxim that the easiest and least costly damage to repair is that which does not occur.

The ESGRA methodology uses a semi-quantitative method to calculate the risk management adjusted probability (F_{PG}), based on a probability factor (F_P) and a subsequent risk management assessment (F_G). This is used both for sources of danger and for measures to prevent and avoid further damage and/or conditioning factors, which are referred to as "equipment" in ESGRAs, irrespective of the item concerned.

Since the purpose of ESGRAs is the management and reduction of environmental risk in an installation, it is recommended that, as a last step, the operator performs a small analysis to assess whether certain measures—such as equipment replacement (technological improvement actions) or management improvement actions—have a significant impact on risk reduction (always taking into account the limitations due to the degree of simplification of the study).

15.2. ACCESS TO THE ESGRA MODULE

The ESGRA module must be accessed through the SIRMA browser, which is located under the "ARM, IDM and MORA computer applications" section.



Figure 15.2-1. ESGRA module in the left side menu of SIRMA. Source: SIRMA.

On the "ESGRA Module" section of the SIRMA navigator, the different options of the navigation panel appear, specifically the "Description", "Make New Report" or "Report History" buttons.



Figure 15.2-2. Navigation panel of the ESGRA Module Source: SIRMA.

First, the "Description" section provides a brief summary of the usefulness of the ESGRA module. This screen provides hyperlinks to the SIRMA tool user manual and its annexes, all in PDF format. It also includes a section with a practical example aimed at providing the user with information on how to use ESGRA to carry out a study of a fictitious installation.

Description

The module of Simplified Studies for Environmental Risk Management (ESGRA module) aims to provide information about environmental risks to those operators who are currently not required to conduct environmental risk analyses, that is, those not included under section a) of Article 37.2 of the Regulation for the partial implementation of Law 26/2007, of October 23, on Environmental Liability. This information is useful for reducing the consequences or the likelihood of environmental damage without the need to carry out a full environmental risk analysis with the scope required by environmental liability regulations.

The ESGRA module focuses on the field of risk management, prevention, and avoidance of new environmental damage, aiming to serve the aforementioned operators as a support tool in this regard. This approach seeks to encourage operators to become involved and take action before environmental damage occurs, embracing the principle that the easiest and least costly damage to repair is the one that never happens.

Example ESGRA reports

In the table below, the ESGRA report that accompanies the SIRMA user guide as an example is available. To consult the text of the report, just click on the "Example" icon. In addition, by clicking on the "Modify / See" icon, it is possible to consult all the necessary screens to carry it out and navigate through them.

Name	Finished	Example	Modify / See
There are no records to show.			

Documentation

User's guide

Annexes

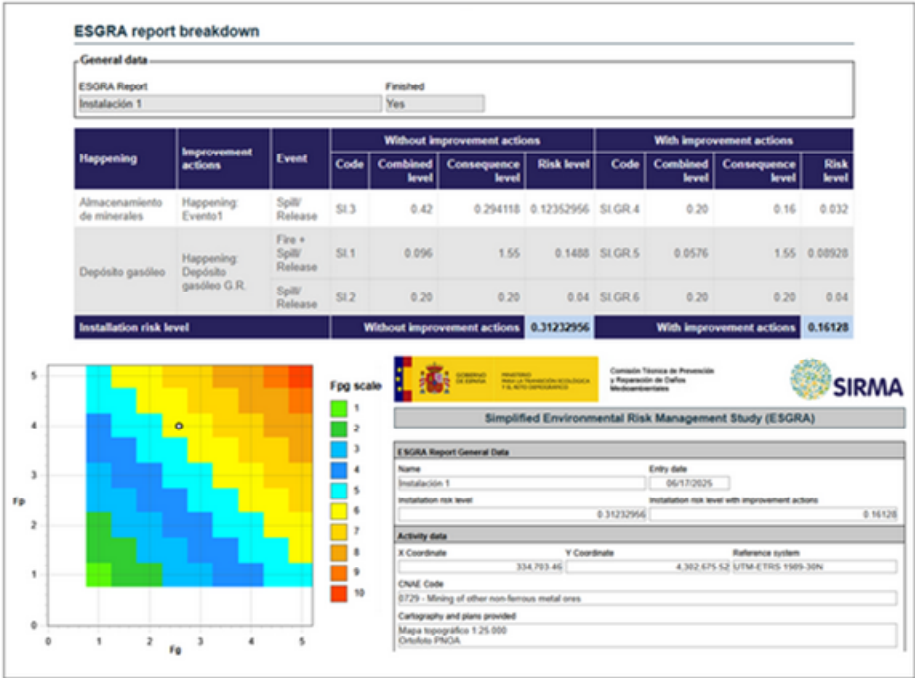


Figure 15.2-3. "Description" screen of the ESGRA module. Source: SIRMA.

15.3. COMPLETE NEW REPORT

The procedure to create a new ESGRA study is started using the "Complete New Report" button. The screens on which the user must enter the information to fill in the report are detailed below.

15.3.1. NEW ESGRA REPORT

After clicking on the "Complete New Report" button, the "New ESGRA Report" screen appears, where data entry begins. The requested information is divided into two sections: ESGRA report data and activity data.

Fields marked with an asterisk (*) throughout the module indicate that their completion is mandatory.

The following information is requested in the Data section of the ESGRA report:

- **Name***: enter the name you wish to give to the report.
- **Registration date***: the date on which the report was started is displayed by default.
- **User***: the user who is making the report is displayed by default.

On the other hand, in the section Activity Data, the following information is requested:

- **Location***: The coordinates where the facility under study is located are mandatory.
- **CNAE Code***: The Spanish National Classification of Economic Activities or CNAE allows facilities to be classified according to the activity they carry out.
- **Cartography and plans provided**: The user can enter in this section all the relevant information regarding the cartography and plans of the study area.
- **Description of the installation***: This is an open text field in which the operator shall describe the characteristics of the installation including information on sources of hazards, agents, pollution prevention and avoidance measures, etc.

After filling in the requested information, the user must select "Save" if he/she wants to continue with the development of the study or "Cancel" if he/she wants to change any data.

ESGRA report happenings

✶ [ESGRA reports](#)

General data

ESGRA Report

Finished

Modify

Installation risk level

Installation risk level	Installation risk level with improvement actions	Breakdown

ESGRA report happenings

Entry data of Happening

All

Actions	Name	Complete	Source of danger	Basic event	Probability	Start assessment

One register found. Page 1

Figure 15.3.2-1. "ESGRA report events". Source: SIRMA.

Through the button "Add Event", it is possible to enter a new event for the study of the installation. To do so, a new screen will open under the heading "New event", which displays the ESGRA Report data and whether or not the ESGRA Report has been finalised.

The following information must be included on this screen:

- **Name***. This is the name the operator wishes to assign to the event being entered. An example would be: Toluene tank rupture.
- **Hazard source category***. A drop-down menu is used to select the category to which the source of danger belongs and in which the undesired event is triggered.
- **Source of danger***. A drop-down menu is used to select the source of danger to which the event to be entered belongs.
- **Basic event***. The basic event to be associated with the hazard source must be selected via a drop-down menu.
- **Type of agent***. A list of damage-causing agents appears in a drop-down menu. The agent used in the hazard source being defined must be selected from "Chemical", "Physical" or "Biological".
- **Type of spill***. Depending on the source of the hazard to which the basic event being completed belongs, indicate from the options provided in the drop-down list whether it is a leak, a rupture, the flow rate or the quantity of spillage, etc.
- **Type of substance***. A drop-down menu allows indicating whether the stored substance is non-combustible or whether it belongs to one of the following groups:

Group	Description
Group 0	Products in gaseous state. The product is below the boiling point or the normal boiling point is lower or equal to -25°C
Group 1	Products that normally are in or higher than the ignition point, but lower than the normal boiling point. Example: Liquids P1: Extremely and highly flammable liquids, more specifically liquids with an ignition point lower than 21° C
Group 2	Products that are at below 35° C and below the ignition point. Example: Liquids P2: Flammable liquids, more specifically liquids with an ignition point higher than 21° C and lower than 55° C
Group 3	Products that are at below 35° C or higher and below the ignition point. Example: Liquids P2: Flammable liquids, more specifically liquids with an ignition point higher than 55° C and lower than 250° C

Figure 15.3.2-2. Substance groups. Source: *Flemish Government*, 2009.

- **Probability of event.** Calculated from literature data and based on the data entered. This data is automatically preloaded by the application.
- **Number of elements of the hazard source*.** The number of hazard source elements in the installation shall be indicated.
- **Remarks.** This field allows the user to enter any particularities about the data included in the report.

New happening

Happening data

ESGRA Report

Finished

No

Name*

Source of danger category

Source of danger

Basic event*

Agent type*

Type of discharge*

Type of pollutant*

Probability of occurrence

Nº vessels*

Remarks

Save Cancel

Figure 15.3.2-3. "New event". Source: SIRMA.

When filling in the requested information, the "ESGRA Report Events" screen will display a table showing the main details of the registered event, as well as its associated probability and the access to the application functionalities.

Actions	Name	Complete	Source of danger	Basic event	Probability	Start assessment
 	Evento 1	No	Tanks containers	50 mm diameter hole	0.00003	

One register found. Page 1

Figure 15.3.2-4. Table "ESGRA Report Events". Source: SIRMA.

By means of the following buttons, you can access different functionalities:

- **"Pencil" button**  : allows you to edit the information entered in the registered event.
- **"Bin" button**  : allows you to delete the registered event.
- **"Start evaluation" button**  : allows you to enter more specific information about the event. Necessary to complete the study.

15.3.3. DETAILS OF THE EVENT

To continue filling in the report, clicking on the "Start evaluation" button takes you to the "Event detail" screen, which asks for more detailed data on the components of the event.

This screen displays, by way of information, the general data of the study being conducted as well as the specific event being examined.

Additionally, a section called "Event risk level" appears where, once all the requested event information has been entered, the level of risk associated with the event will be indicated. This level will be used as a reference for comparison with other events at the installation itself, so that the higher the risk level of an event, the greater the potential environmental consequences caused by the undesired event under analysis. This level of risk will also be used to compare with the level of risk after possible actions to improve the installation, a step that will be explained later in this guide.

The next section is "Initiating Events of the Incident", where the data of each initiating event resulting from the event under examination shall be requested. As these data are entered, the application will automatically fill in the values necessary for the calculation of the risk level of the event. This will be done on the basis of the already calculated Probability Factor (Fp), and after completing the Risk Management (Fg) assessment, the Risk Management adjusted Probability Factor (Fpg) is automatically calculated. This Fpg value shall be calculated automatically for each initiating event and for each conditioning factor. After obtaining all the Fpg, the automatic calculation of the Risk Management Adjusted Combined Probability Level (Combined Level) will be performed. Subsequently, when entering the information requested by the Consequences section, the application will automatically calculate the Combined Consequence Level

Assessment Index (Cg). Finally, from the combined Fpg Level and the Combined Consequence Level Assessment Index (Cg), the Risk Level of the event will be calculated.

These steps will be reflected in a table, where the values will be displayed as the risk assessment progresses. Holding the mouse over each "Factor" or "Level" displays an explanatory text indicating its meaning.

Happening detail

◀ ESGRA reports ▶ Happenings

General data

ESGRA Report	Finished
	No
Happening	Complete
	No

[Go to Report events](#)

Happening initiating events

Starting from the already calculated Probability Factor (Fp) value and after completing the Risk Management assessment (Fg), the Risk Management-adjusted Probability Factor (Fpg) is automatically calculated. This Fpg value will be automatically calculated for both each initiating event and each conditioning factor. Once all Fpg are obtained, the Combined level of probability adjusted by Risk management (Combined level) will be automatically calculated. Subsequently, when the information requested in the Consequences section is entered, the application will automatically calculate the Combined consequence level assessment index (Cg).

Initiating event	Probability	Fp	Fg	Fpg	Combined level	Cg	Risk level	Simplified risk assessment
SI.1 - Fire + Spill/Release	0.0000273	3						× Risk management ⚠ Conditioning factors × Consequences
SI.2 - Spill/Release	0.0000027	3						× Risk management ⚠ Conditioning factors × Consequences

Figure 15.3.3-1. "Event details". Source: SIRMA.

The first section that appears is the initiating event, the name of which indicates which initiating event is associated with the event being analysed. This is followed by the probability and the Probability Factor (Fp), which are automatically calculated. This is because the initiating event has its associated probability of failure, so when selecting the hazard source and event, it recalculates this probability to the semi-quantitative scale, giving it a given value from 1 to 5, which is the probability factor.

To calculate the following values, the requested data must be entered. For this purpose, in the column "Simplified risk assessment", there are three sections—marked by hyperlinks—which lead to different completion screens. These principles are as per below: Risk management, conditioning factors and consequences. Each of these screens is detailed below.

- **Risk management.** This section calculates the Risk Management Adjusted Probability Factor (Fpg) of the initiating event. When this button is clicked, a new screen "Risk

management of the initiating event" appears, where, first of all, the general data of the report are displayed. There is also a table with different sections to be filled in.

Risk management of the initiating event

[ESGRA reports](#)
[Happenings](#)
[Happening detail](#)

General data

ESGRA Report	Finished
	No
Happening	Complete
	No
Initiating event	

[Go to Happening detail](#)

[Go to Conditioning factors](#)

[Go to Consequences](#)

Entry data of Indicator

Modify / See	Indicator	Value	Added by	Active	Deactivate / Activate	Remove
	Adequate sizing		ESGRA	Yes	☒	
	Age of equipment		ESGRA	Yes	☒	
	Control of storage conditions		ESGRA	Yes	☒	
	Control of tank levels		ESGRA	Yes	☒	
	Existence and age of an updated plan for the prevention of environmental accidents		ESGRA	Yes	☒	
	Frequency of inspections		ESGRA	Yes	☒	
	Frequency of use of equipment		ESGRA	Yes	☒	
	Improvements on existing regulations		ESGRA	Yes	☒	
	Inspection plans and type of maintenance		ESGRA	Yes	☒	
	Operation procedure with supervision and registration		ESGRA	Yes	☒	
	Paved surface and condition of pavement		ESGRA	Yes	☒	
	Procedure and control of admission of substances		ESGRA	Yes	☒	
	Procedure for commissioning new equipment		ESGRA	Yes	☒	
	Process automation		ESGRA	Yes	☒	
	Protection and treatment of equipment against corrosion		ESGRA	Yes	☒	
	Protection of equipment against impacts		ESGRA	Yes	☒	
	Protection of underground equipment		ESGRA	Yes	☒	
	Protection or covering of equipment against the elements		ESGRA	Yes	☒	
	Watertightness of equipment		ESGRA	Yes	☒	

Figure 15.3.3-2. "Risk management of the initiating event". Source: SIRMA.

Initially, a series of pre-determined risk management indicators appear depending on the type of hazard source being analysed—and to which the initiating event in question is associated—which can be assigned a value (1: optimal; 3: adequate; 4: inadequate; 5: absent) qualitatively according to the status of the equipment or the hazard source, using the "Configure/View" button .

In turn, the list of indicators can be modified, either by activating or deactivating an existing indicator, or by deleting or introducing a new indicator. To activate/deactivate, use the button . If it is green, the indicator is activated. If it is red () , the indicator is deactivated. To change the on/off status, pressing the button will open a screen, where the justification for the change must be indicated.

On the other hand, if you wish to register an indicator, a new screen will open through the "Register Indicator" button, where you must select and add between:

- **ESGRA indicator:** By means of a drop-down menu, an indicator can be selected from those available in the application.
- **Own indicator:** An own indicator can be introduced according to the operator's experience.

Once one of these two sections has been selected, a value (optimal, adequate, inadequate or absent) must be added via a drop-down menu. A justification for the aggregation of the indicator should be added, as well as the possibility to add comments. After completing all sections, you can select the "Save" button if you want to add the indicator, or select the "Cancel" button if you do not want to add the indicator.

Add risk management indicator to the initiating event

Indicator data

ESGRA Report

Finished

No

Happening

Complete

No

Initiating event

☐ ESGRA Indicator

☐ Own indicator

Active

Value*

Yes

Justification of adding the indicator*

Remarks

Save

Cancel

Figure 15.3.3-3. "Add risk management indicator to the initiating event". Source: SIRMA.

Finally, to delete an indicator, this can be done by clicking on . This option is only available for indicators added by the user.

To continue to another section or return to the previous screen, you can move forward or backward in the report using the following buttons:

Go to Happening detail

Go to Conditioning factors

Go to Consequences

Figure 15.3.3-4. Scroll buttons. Source: SIRMA.

After entering all the values of the risk management indicators, the risk management evaluation (Fg), and thus the value of the risk management adjusted probability factor

(Fpg), is automatically completed. This Fpg can be viewed in a graph, by means of the button :

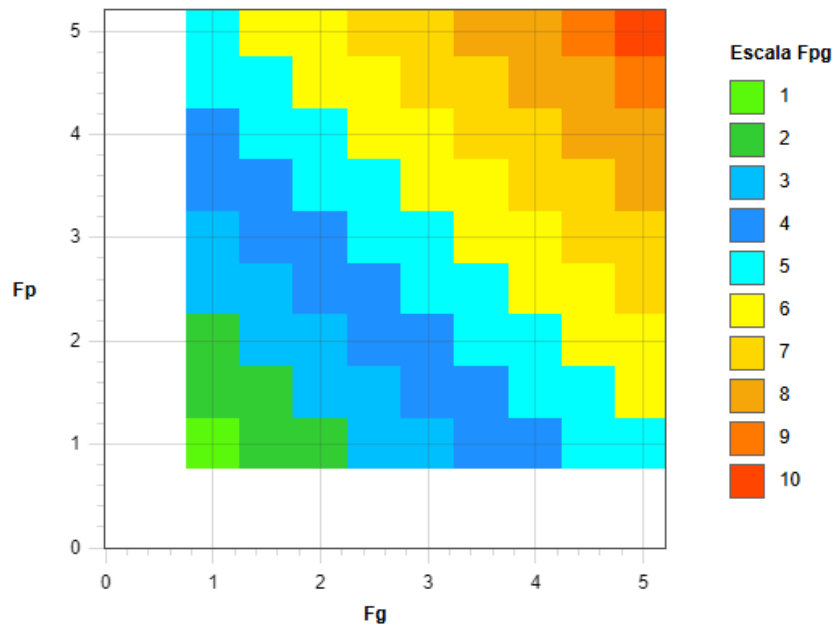


Figure 15.3.3-5. Probability factor graph adjusted for risk management of the initiating event.

Source: SIRMA.

- **Conditioning factors.** This section makes it possible to introduce into the study the equipment or elements that act as preventive measures to avoid further damage and/or conditioning factors. The completion of this section, together with the "Risk Management" section, will result in the value of the risk management adjusted combined probability level (known as the Combined Level) of the initiating event. Clicking on the button "Conditioning Factors" in the column "Simplified Risk Assessment" takes you to a new screen.

Conditioning factors of the initiating event

[← ESGRA reports](#)
[← Happenings](#)
[← Happening detail](#)

General data

ESGRA Report

Finished

No

Happening

Complete

No

Initiating event

Go to Happening detail

Go to Risk management

Go to Consequences

Entry data of Conditioning factor

Starting from the already calculated Probability Factor (Fp) value and after completing the Risk Management assessment (Fg), the Risk Management-adjusted Probability Factor (Fpg) is automatically calculated. This Fpg value will be automatically calculated for both each initiating event and each conditioning factor. Once all Fpg are obtained, the Combined level of probability adjusted by Risk management (Combined level) will be automatically calculated. Subsequently, when the information requested in the Consequences section is entered, the application will automatically calculate the Combined consequence level assessment index (Cg).

Modify / See	Name	Conditioning factor	Fp	Fg	Fpg	Risk management	Remove
There are no records to show.							

Figure 15.3.3-6. "Factors conditioning the initiating event". Source: SIRMA.

On this screen, on the one hand, a table appears with the general data of the report, where the main information is found. On the other hand, new elements are introduced via the "Add conditioning factor" button, which takes you to the page "Add conditioning factor to the initiating event".

Add conditioning factor to the initiating event

General data

ESGRA Report

Finished

No

Happening

Complete

No

Initiating event

SI.1 - Fire + Spill/Release

Name*

Conditioning factor category

Conditioning factor*

Remarks

Save

Cancel

Figure 15.3.3-7. "Add conditioning factor to the initiating event". Source: SIRMA.

Here, the IT tool will ask for the following data:

- **Name***. The name the user assigns to the conditioning factor that is added to the initiating event. It is recommended that they be given a descriptive name so that they are easily identifiable afterwards.
- **Category of the conditioning factor**. A drop-down menu allows you to select the category to which the item you want to add belongs.
- **Conditioning factor***. Once the category has been selected and through another drop-down menu, the desired conditioning factor is selected.
- **Remarks**. If the user wishes to add remarks on the conditioning factor, these can be included in this text box.

Once a conditioning factor is registered, this information will be represented in a table of the following style, where the probability factor has been calculated in a similar way as the initiating event, since it has a probability of failure associated with it.

Modify / See	Name	Conditioning factor	Fp	Fg	Fpg	Risk management	Remove
		Automatic blocking system	3				

Figure 15.3.3-8. Conditioning factor table. Source: SIRMA.

In the conditioning factors, the "Risk management" section must also be completed. This is done by clicking on the button  and accessing a new screen. On this screen, risk management must be carried out in a similar way to that carried out in the initiating event section, i.e. by giving values (optimal, adequate, inadequate, absent) to the preset indicators, in a qualitative manner according to the status of the conditioning factor. In turn, the list of indicators can be modified, either by activating or deactivating an existing indicator, or by deleting or introducing a new indicator. On this screen, the buttons for scrolling through the different sections of the simplified risk assessment appear again:

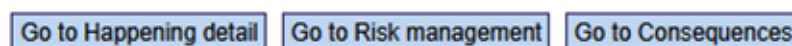


Figure 15.3.3-9. Scroll buttons. Source: SIRMA.

Once all information related to the risk management indicators is filled in, the conditioning factor is complete, i.e. the Risk Management Factor (Fg) and Risk Management Adjusted Probability Factor (Fpg) values are automatically calculated. The latter value can be viewed by clicking on the button , where a graph is displayed that represents the derivation of the Fpg using the previously calculated values of Fp and Fg.

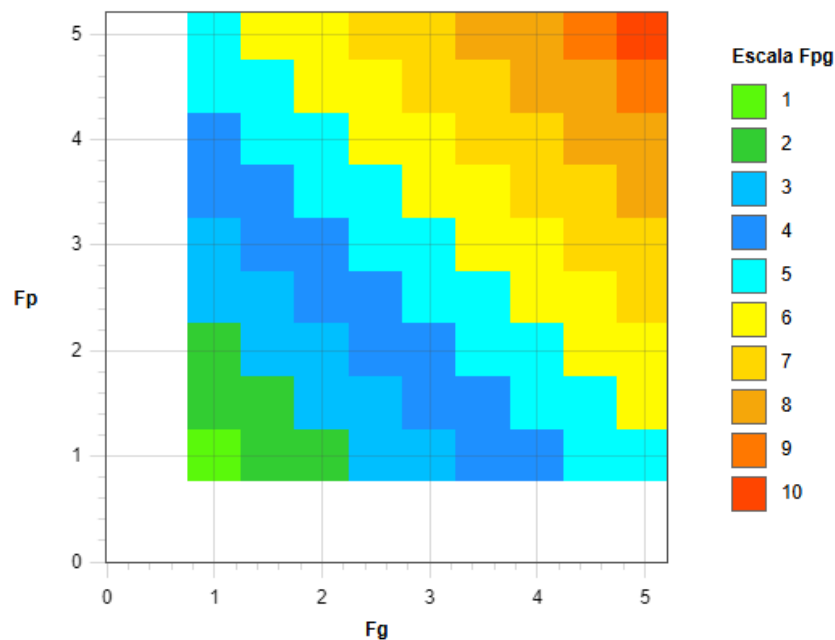


Figure 15.3.3-10. Risk management-adjusted likelihood factor graph of the conditioning factor.

Source: SIRMA.

With the Fpg value of both the initiating event and the complete conditioning factors, the application can automatically calculate the Risk Management Adjusted Combined Probability Level (Combined Level).

- **Consequences.** The objective of this section is based on giving a semi-quantitative value to the consequences, in environmental terms, of undesired events that could result from the operation of the installation.

To do so, a series of data must be entered, as detailed below. When the "Consequences" button is clicked, the "Environmental consequences of the initiating event" screen appears, in which, first of all, a table with the general data of the installation study can be found. On the other hand, the application automatically filters, according to the type of agent and initiating event previously selected, the type(s) of consequences that correspond to that event. These can be of four types, each with its own characteristics:

- **Chemical.** To complete this section, data on chemical agent, resource and quantity of agent discharged (in m³) are requested. The type of chemical agent and the resource are selected via drop-down menus, while the quantity must be entered manually in a box.
- **Physical.** To complete this section, data on the physical agent, resource and quantity of agent discharged (in tonnes) are requested. The physical agent type and resource are selected via drop-downs, while the quantity must again be entered manually.

- **Biological.** To complete this section, data on the type of biological agent and resource are requested. These are selected via drop-down menus.
- **Fire.** To complete this agent, data on fuel hazard, climate adversity, physiological hazard and effect on a protected natural area are requested. This data is filled in by means of drop-down menus. Depending on whether the installation is located on the Iberian Peninsula or in the Canary Islands, the options proposed in the "Climate Adversity" drop-down menu will be different.

In case the initiating event has more than one type of consequence, the information of each type is represented in a table, where the data of each type can be entered via the "Configure/View" button .

Initiating event environmental consequences

[ESGRA reports](#) [Happenings](#) [Happening detail](#)

General data

ESGRA Report	Finished
	No
Happening	Complete
Name	No
Initiating event	
SI.1 - Fire + Spill/Release	

[Go to Happening detail](#)

[Go to Risk management](#)

[Go to Conditioning factors](#)

Modify / See	Agent type	Level
	Chemical	
	Fire	

2 registers found. Page 1

Figure 15.3.3-11. "Environmental consequences of the initiating event". Source: SIRMA.

As in the previous sections, on this screen it is possible to navigate through other sections of the simplified risk assessment using the buttons "Go to Event Detail", "Go to Risk Management" and "Go to Conditioning Factors".

Once the information on the environmental consequences of the initiating event is complete, the application automatically calculates the Combined Consequence Level Assessment Index (Cg).

After having completed the three sections of the column "Simplified Risk Assessment"—Risk Management, Conditioning Factors and Consequences—the specific values of the initiating event will have been calculated automatically, resulting in the Risk Level value, which will be used to compare with the other initiating events entered to identify which of them has a higher risk to the environment.

Once all event initiating events have been completed, the final Risk Level of the event will be calculated. In turn, if all events have been completed, the overall Risk Level of the installation will be calculated.

15.3.4. ACTIONS TO IMPROVE RISK MANAGEMENT

Since one of the main objectives of the ESGRAs is to provide information to the operator to improve the risk management of the installation, using improvement actions, both technological—changes in processes or equipment— and managerial— changes in the behaviour of the installation in the face of risk—, there is still one more step to complete the ESGRA study of the installation, that of the risk management improvement actions.

To carry out the risk management improvement actions, once each event is complete, a new section called "Risk management improvement actions" will appear within each event, where different options are proposed to simulate what the risk level of the installation would be if certain improvements in risk management are carried out. These options can be performed at Event level, being able to apply different actions for each equipment or source of danger introduced in the installation.

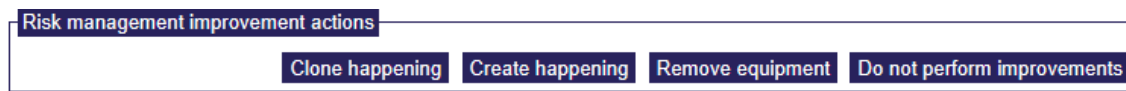


Figure 15.3.4-1. "Actions to improve risk management". Source: SIRMA.

The different options proposed for implementing improvements are:

- **Clone event.** By selecting this option, the application will duplicate the event—associated to a given hazard source—on which the risk management improvement is being performed, making it possible to modify in this new duplicated event both characteristics of the hazard source (such as the nature of the agent used, the type of spill or the number of elements in the installation) and the simplified risk assessment (e.g. assessment of risk management indicators, modification of conditioning factors, etc.).

To make these modifications, a new section called "Event for risk management improvements" appears on the "Event detail" screen, where, by clicking on the button , you can access the characteristics of the hazard source. On the other hand, by means of the "Detail" button , modifications can be made to the simplified risk assessment. The functionality of this screen is analogous to that described above.

Happening for risk management improvements

Actions	Name	Complete	Source of danger	Basic event	Probability	Detail
	Bomba centrífuga G.R.	Yes	Centrifugal pumps with gaskets	Leak. deq = 0,1 Dmax	0.0044	

Figure 15.3.4-2. "Risk Management Improvement Event" table. Source: SIRMA.

As modifications are made to the improvement actions, the application updates the risk level of the event to check whether the actions effectively lead to better management (the value of the risk level of the improvement event is lower than the value of the risk level of the initial event) or whether, on the contrary, they worsen or do not modify risk management, i.e. the value of the risk level of the improvement event is equal to or higher than the value of the risk level of the initial event. This value can be found in the "Event Risk Level" section of the "Event Detail" screen.

If you want to delete the improvement action event, either because the risk level of the event is not improved or for another reason, you should do so via the bin button .

Since the "Event detail" screens of the initial event and the improvement actions have the same format, in order to avoid confusion for the user, a red line defining the event being improved as "Current event (risk management improvements)" has been introduced in the general data screen of the improvement event.

Happening detail

[ESGRA reports](#) [Happenings](#) [Original happening detail](#)

General data	
ESGRA Report	Finished
	No
Original happening	Complete
	Yes
Actual happening (risk management improvements)	Complete
	Yes

[Go to Original happening detail](#)

Happening risk level

Happening for improvements risk level

0.07959

Happening initiating events

Starting from the already calculated Probability Factor (Fp) value and after completing the Risk Management assessment (Fg), the Risk Management-adjusted Probability Factor (Fpg) is automatically calculated. This Fpg value will be automatically calculated for both each initiating event and each conditioning factor. Once all Fpg are obtained, the Combined level of probability adjusted by Risk management (Combined level) will be automatically calculated. Subsequently, when the information requested in the Consequences section is entered, the application will automatically calculate the Combined consequence level assessment index (Cg).

Initiating event	Probability	Fp	Fg	Fpg	Combined level	Cg	Risk level	Simplified risk assessment
SI.GR.9 - Fire + Spill/Release	0.000088	3	2.50	5 	0.063	0.93	0.05859	✓ Risk management ✓ Conditioning factors ✓ Consequences

Figure 15.3.4-3. "Event Detail" screen of the risk management improvements. Source: SIRMA.

There are several ways to try to reduce the risk of the installation through improvement actions:

- **Create event.** One way to better manage risk is through changes in industrial processes, in this case by replacing one item or piece of equipment with another that causes less damage in the event of an accident. This is known as technological improvement actions. In order to make an improvement of this type, the "Create event" option must be selected, through which the data for a new event will be entered in a similar way to that detailed above. That is, the fields "Event", "Risk management", "Conditioning factors" and "Consequences" should be completed.

To perform these actions, a new section called "Event for risk management improvements" appears on the "Event detail" screen, where, by clicking on the button , you can access the characteristics of the hazard source. On the other hand, by clicking on the "Detail" button , the simplified risk assessment can be carried out.

If you finally want to delete the improvement action event, you can do this via the bin button .

By selecting this option, the application, in order to calculate the Risk Level of the installation with improvement actions, deletes the information of the initial event, replacing it with the information of the new event created.

- **Remove equipment.** Another option to optimise the risk management of the installation would be to remove equipment or elements, i.e. to remove it from the installation by eliminating its operation. This eliminates from the report the possibility of this equipment causing damage to the environment as a result of its operation.

To do so, the "Remove equipment" button opens the screen "Removal of equipment as a risk management improvement of the event", where a justification for the removal must be filled in. The application then discards the selected event from the equation for calculating the risk level of the installation with improvement actions.

- **Do not make improvements.** The last available option of the facility's risk management improvement actions is to make no improvements, i.e. in the event under analysis, no improvements would be made. To do so, the "Do not make improvements" button opens the "Do not make event risk management improvements" screen, where a justification must be filled in.

Once the "Actions to improve risk management" section has been completed, the ESGRA survey data completion would have been completed. On the screen "ESGRA report events", the section "Risk level of the installation" can be seen with the information filled in. By clicking the table's "breakdown" button , you can access a table with more detailed information, where you can find a comparison between the current data of the installation and the data after implementing the selected improvement actions. This panel is purely informational, allowing users to see the

benefits—in terms of risk—that would be achieved by implementing improvements in the facility's risk management.

15.3.5. REPORT COMPLETION

Once the ESGRA report is complete, i.e. all information that the user wishes to incorporate into the analysis has been entered, the "ESGRA report events" screen can be accessed to finalise the report.

In this section, through the icon appearing in the "General Data" section and via the "Finish Report" button—which appears once all events are complete—users can finalise the report. To finalise the report, the "Confirm" button must be pressed.

Once the report has been finalised, in the general reports screen, the "Finalised" column will be marked with a "Yes" indicating that the report has been finalised and can no longer be modified. If the user wishes to make changes to the report, they can create a copy using the "Duplicate" functionality  of the application, assigning it a different name.

15.3.6. PRINT PROJECT

Once some of the information requested in the sections of the ESGRA report has been completed, the application enables the option to print the project in PDF format. If the project is printed before it has been completed, it will be printed with the watermark "Draft". If printed after completion, the final version will be printed without a watermark.

Clicking the "Print report" button opens a page in the browser. Use the print option in the browser menu to print/save as a PDF. Among the configuration options offered by browsers, the user must ensure that the option to print images is enabled.

15.4. REPORT HISTORY

The ESGRA Module report history includes all reports (both finalised and non-finalised) created by the user. To access this information, click on “Report History” within the “ESGRA Module” section of the application’s navigation.

Within the history, you can access a list of all the reports available for that user. The information collected from each report is as follows:

- **Name.** This is the name given to the report by the user.
- **Date.** Report completion date.
- **Version.** Version of the tool to which the report pertains.
- **Finalised.** Indicates whether the report is finalised or not. In this regard, it is worth remembering that finalised reports cannot be modified.
- **Duplicate.** Once the report has been finalised, the application allows you to create an identical copy of the report in which you can modify the desired data. Clicking on the double report icon will open a duplicate of the previous report in editable format which must be saved under a different name.
- **Configure/View.** This button enables the user to either modify the report or just view and consult it.
- **Delete.** It offers the possibility to delete reports.

Consultation of ESGRA reports

Search panel

Name

Date from

Date to

Completed

Q

[Entry data of ESGRA Report](#)

Name	Date	Version	Finished	Duplicate	Modify / See	Remove
		ESGRAV1	No			
		ESGRAV1	No			
		ESGRAV1	No			
		ESGRAV1	Yes			
		ESGRAV1	Yes			
		ESGRAV1	No			
		ESGRAV1	No			

7 registers found. Page 1

Figure 15.4-1. ESGRA report history. Source: SIRMA.

Additional functionalities of the "Report history" include the ability to sort reports (by clicking the column header based on which the user wants to sort) and the option to search for reports using the search field and "magnifying glass" button located at the top right of the list.



GOBIERNO
DE ESPAÑA

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

SECRETARY OF STATE
FOR THE ENVIRONMENT

DIRECTORATE GENERAL FOR ENVIRONMENTAL
QUALITY AND ASSESSMENT

TECHNICAL COMMISSION OF PREVENTION AND REMEDIATION OF ENVIRONMENTAL DAMAGES