

PNR-000070, Rev: 08 – 12/26/2023

Issuing Board: Health, Safety, Environment and Operational Risks

Lead Technician: Lorena Figueiredo - ID. 01496376

Target Audience: All areas of Vale

Training needed: () YES (X) NO

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EXPECTED RESULTS

Ensure that all adverse events related to the health and safety of workers, the environment, community members, company assets or production processes are reported, recorded, and that the appropriate efforts are directed towards their analysis, so that corrective and preventive actions are implemented, providing organizational learning for the company, in line with element 16 of the VPS – Problem Solving and Continuous Improvement, seeking to achieve a culture of excellence in the interests of safety.

1. OBJECTIVES

Establish the guidelines, criteria and general principles associated with Vale's Health, Safety, Environment, Community and Process Safety Event Management process.

2. APPLICATIONS

This procedure applies to Vale globally.

3. REFERENCES

3.1. Internal References:

- POL-0019-G: Sustainability Policy
- POL-0009-G: Risk Management Policy
- NOR-0003-G: Risk Management Standard
- NFN-0001: Planning, Development and Management Standard
- NFN-0009: Sustainability Standard
- PNR-000005: Reliability – Failure Analysis and Loss Profile
- PNR-000067: Health, Safety and Environmental Management for Vale's Contractors
- PNR-000079: Vale's Social Action Guide
- PNR-000033: HIRA – Hazard Identification and Risk Analysis for Undesired Material Events
- PNR-000028: Problem Solving and Continuous Improvement
- PNR-000182: Survey of Environmental Aspects and Impacts
- PNR-000101: Change Management
- PNR-000181: Environmental Liability Management
- PGS-005486: Non-conformity Management.
- PGS-004109: Guidelines for Managing Legal and Other HSE Requirements
- PGS-005229: Integrated Community Safety Plans
- PGS-005912: General Guidelines for Emergency Assistance of Victims and Families in Events with Social Loss
- PRO-027476: Preliminary Risk Assessment and Identification and Assessment of Aspects and Impacts

3.2 External references:

- AMA (American Medical Association) - Guides to the Evaluation of Permanent Impairment by American Medical Association
- ICMM (International Council on Mining and Metals)
- ISO 14001: 2015 – Environmental Management Systems
- ISO 45001: 2018 – Occupational Health and Safety Management Systems
- OSHA (Occupational Safety and Health Administration) – US Dept. of Labor

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- API 754 – American Petroleum Institute – Process Safety Performance Indicators for the Refining and Petrochemical Industries – 3ed
- CCPS – Process Safety Indicators – Version 4.1
https://www.aiche.org/sites/default/files/docs/pages/ccps_process_safety_metrics_-_v4.1.pdf

4 DEFINITIONS:

4.1 Terms:

Corrective Actions: Action to eliminate the root cause of an identified loss or event, deviation or other undesirable situation, in order to prevent its repetition. There can be more than one cause for the same event (event, deviation or loss).

Comprehensive Actions: Actions aimed at eliminating or reducing the risk of a similar event in another area of Vale.

Corporate Strategy Actions: Actions that impact the company's global strategy and will need to be evaluated by corporate/regulatory teams (SS, MA, Engineering, Procurement, HR, etc.).

Front Line Actions: Actions classified as “optimal”. Engineering controls, replacement or elimination.

Management System Actions: Actions classified as “good”. Controls that will act to address opportunities in the local management system.

Immediate Actions: Action taken immediately after the event to contain or minimize the effect of an identified event, loss or deviation. It is not intended to eliminate the cause of the problem or prevent recurrence.

Preventive Actions: Action to eliminate the cause of a potential event (deviation, non-conformity, loss, event with or without loss) or other potentially undesirable situation, in order to prevent its occurrence. There can be more than one root cause for a potential event.

Coverage area: Geographical boundaries within which the operational areas are responsible for activities and processes.

Controlled Activities: Activities in which Vale has the formal right, responsibilities and control (direct or indirect) for ensuring that its health and safety requirements are implemented and complied with.

Non-Controlled Activities: Activities in which, although Vale has the formal right and responsibilities (direct or indirect) for ensuring that its health and safety requirements are implemented and complied with, it cannot guarantee the same for other users and/or areas of access or work.

Secondary containment: Equipment or assets designed to contain hazardous materials and/or energies released in primary containment. Secondary containment systems include, but are not limited to, tank dikes, barriers around process equipment, drainage or oil collection systems, etc.

Control: an act, object (engineering), or system (combination of act and object) designed to prevent or mitigate an undesired event.

Critical control: A control that is crucial in preventing the event or mitigating its consequences. The failure or absence of a critical control would significantly increase the risk, even if other controls are in place. Additionally, a control that prevents multiple undesired events or mitigates multiple consequences is typically classified as critical.

Root Cause: The most basic cause that can be reasonably identified, that management has the control to correct and, when corrected, will prevent (or significantly reduce the likelihood of) the problem recurring.

Disease: Abnormal condition or disorder of the body's functions or systems, caused by acute or chronic exposure to agents, toxins, pathogens or other factors.

Event Owner: The event owner is defined as the area responsible for the activity in which the event took place or for the physical location where the event occurred, if it is not associated with an activity. The investigation of the event will help to ratify or rectify the event owner's initial definition.

Dangerous Energy: Chemical, mechanical, hydraulic, pneumatic, electrical, thermal, kinetic and radiation energy with the potential to cause harm to people, the environment, property or the community. These energies must be associated with controls that prevent their unplanned or uncontrolled release.

Event: Any occurrence or adverse condition that has resulted, or could result, in loss, damage or impact, regardless of whether energy is released. It can be classified as:

- **Event with loss/impact:** Events that result in injury or illness to Vale employees or contractors, injury to community members (neighboring or otherwise), adverse impact on the environment, material loss and operational loss.
Note: Events that result in illness of community members are not reportable within the scope of this procedure and, where applicable, should be addressed in specific local programs.
- **Event without loss/impact:** Events that did not result in injury or illness to Vale employees or contractors, injury to community members (neighboring or otherwise), adverse impact on the environment, material loss, operational loss, but which may be precursors to such or which, under slightly different circumstances, could have resulted in a loss event.

Operational Process Safety Events: Events that generate an unplanned or uncontrolled release of energy or hazardous material (loss of primary containment) or that, under slightly different conditions or circumstances, could do so. They involve the performance or absence of controls on operating equipment or assets, within a pre-established coverage area intended for mining, manufacturing, processing, production and the transfer/transport of products, materials and people.

Corporate Strategy: Actions that impact the company's global strategy and will need to be evaluated by corporate/regulatory teams (SS, MA, Engineering, Procurement, HR, etc.).

Tire blowout: An event caused by the rupture of the tire structure, resulting instantaneous movement of a high mass of gas and consequently rapid release of energy.

Note: Punctures/cuts in tires where the loss of nitrogen/air is gradual (not instantaneous) will not be considered a blowout.

Contributing Factor: These are causes that do not cause the event on their own. It is important that related corrective actions are taken.

Environmental impact: any alteration to the physical, chemical and biological properties of the environment caused by any form of matter or energy resulting from human activities that directly or indirectly affects the health, safety and well-being of the population, social and economic activities, biota, the aesthetic and sanitary conditions of the environment, and the quality of environmental resources.

Note: The definition of Environmental Impact used in the scope of this procedure is an adaptation of CONAMA Resolution 001, dated January 23, 1986 and is used in Vale's other corporate procedures.

Complete structured investigation: the application of any recognized method based on a causal factor tree (Example: Sologic, MAC).

Simplified investigation: this means that it is not necessary to apply a structured method to establish the action plan (Example: 5 Whys).

Injury: Temporary or permanent damage to tissue, muscle or bone, typically caused by an identifiable event.

Energy release: Sudden transformation of potential energy into another type of energy (fall, explosion, leak, rupture, projection), characterizing the materialization of a "danger" in a "risk situation".

Hazardous Material: Substance with the potential to cause harm due to its chemical (flammability, toxicity, corrosiveness, reactivity, asphyxiation) or physical (pressure, temperature) properties. Includes non-toxic and non-flammable materials (steam, hot water, nitrogen, CO₂, compressed air).

Community member: A person who has no employment relationship with Vale or its contractors, regardless of being part of local communities directly impacted by Vale's activities. Vale employees, or those of its contractors, outside their working hours or who are not in the course of professional activities related to the company are considered "community members".

Loss of primary containment: Unplanned or uncontrolled release of hazardous energy or material.

Material Loss: Physical damage to equipment, assets or asset components.

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Operational Loss: Loss referring to the time that the process stopped operating within the planned capacity due to the event.

Social Loss: Fatal or non-fatal injury (regardless of its severity) to a community member.

Severity: See NOR-0003-G – Risk Management Standard.

Potential Severity: Characterization of the maximum consequence, among the most probable, that could be generated by the event analyzed, in slightly different circumstances in terms of time, position or non-operation of the controls.

Actual Severity: Characterization of the actual consequences of the event.

4.2 Acronyms:

PRA– Preliminary Risk Analysis

HIRA – Hazard Identification and Risk Analysis

MUE – Material Unwanted Event

LAIA – Survey of Environmental Aspects and Impacts

LD – Line of Defense.

LDE – Line of Defense Expert

MAC – Causal Analysis Method developed internally by Vale.

SOLOGIC – Root cause analysis method.

HAZOP – Hazard and Operability Study

LOPA – Layer of Protection Analysis

1LD – 1st Line of Defense

2LD – 2nd Line of Defense

HSEOPR – Health, Safety, Environment and Operational Risks Department

CAR – Critical Activities Requirements

5 INTRODUCTION:

This normative standard was developed to add value to Vale's activities. Vale's Facilities and Areas of Interest must meet the requirements of this standard and applicable laws and regulations. If there is a conflict between the technical requirements of this standard and laws or regulations, Vale's Facilities and Areas of Interest must apply the more stringent requirement, unless this violates the laws or regulations.

Note: The term “Vale Facilities and Areas of Interest”, for the purposes of this document, is an inclusive term for Vale; it generally applies to all types of operating units, business units, corporate departments, sites and affiliates/subsidiaries operated.

Reliability failures that do not result in dangerous and unsafe conditions for people, significant material damage or other unacceptable consequences, as defined by PNR-000005 – Reliability – Failure Analysis and Loss Profile, are **not** reportable within the scope of this procedure and should be investigated following the requirements in PNR-000005.

All the events included in the scope of this procedure must be minimally assessed in terms of their actual and potential severity. To break down the context of this procedure, it is necessary to define the concepts of High Potential Events for each dimension, as illustrated below:

5.1 Occupational Safety:

High potential occupational safety **events** are classified as **N1**, **N2** or **N3**, i.e. they could either result in fatalities or lives changed:

- Critical or very critical actual severity and/or,
- Critical or very critical potential severity.

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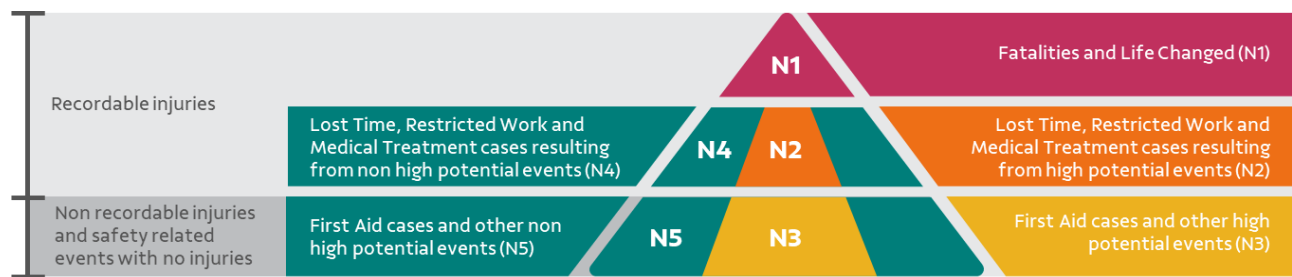


Figure 1 – Pyramid of Occupational Safety Events

Note: Only events resulting from controlled activities are included in the occupational safety pyramid.

Annex 01 – Guide for Classifying and Accounting for Health and Safety Events should be consulted for more details on the criteria for classifying high potential safety events, in line with Vale's fatality prevention strategy.

5.2 Environment:

Events with high environmental potential are classified as **MA1, MA2 or MA3**, i.e. they are capable of causing alterations and/or adverse effects on the environment:

- Significant, critical or very critical actual severity and/or,
- Significant, critical or very critical potential severity.

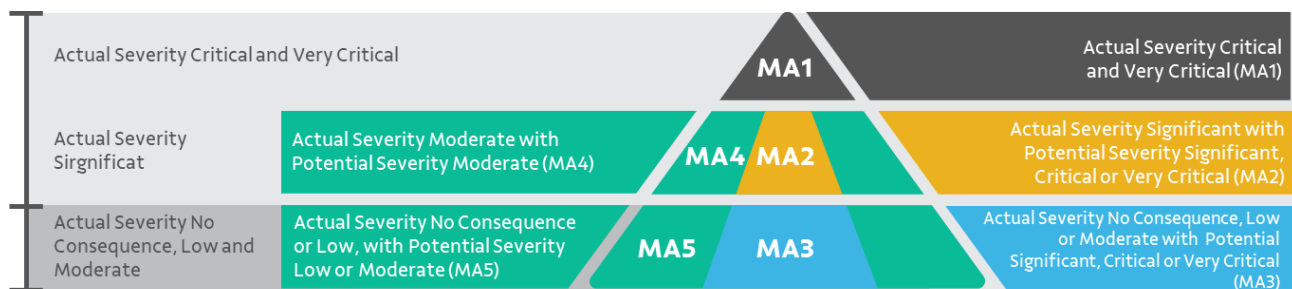


Figure 2 – Pyramid of Environmental Events

Annex 02 – Guide to Classifying Environmental Events should be consulted for more details on the criteria for the classification of high potential environmental impact.

5.3 Operational Process Safety:

Events with a high operational process safety potential are classified as **P1, P2 or P3**, i.e. their actual severity is classified as events with loss of greatest consequence.

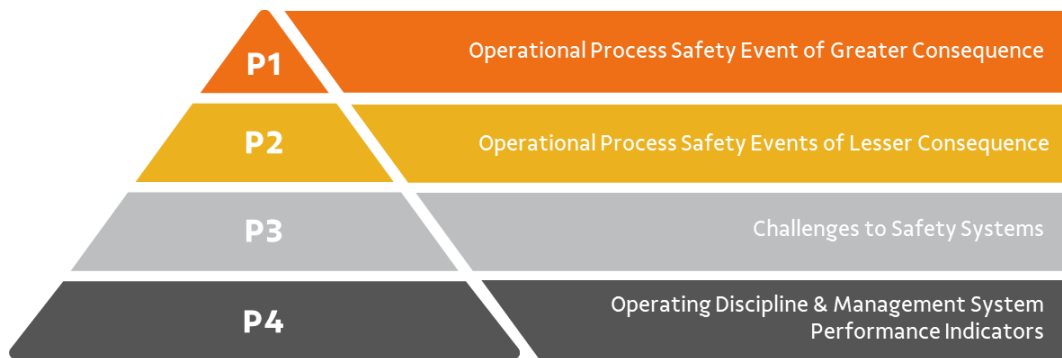


Figure 3 – Pyramid of Operational Process Safety Events

Annex 03 – Guide to the Classification of Operational Process Safety Events should be consulted for more details on the criteria for identifying and classifying events.

5.4 Community:

Events with high potential for the social dimension are classified as **C1**, **C2** or **C3**, i.e.:

- Critical or very critical actual severity and/or
- Critical or very critical potential severity.

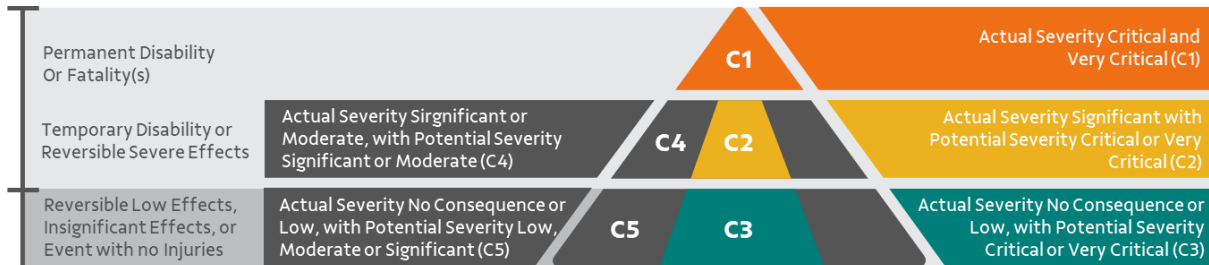


Figure 4 – Pyramid of Social Events

Annex 04 – Guide for Classifying Social Events should be consulted for more details on the criteria for identifying and classifying events.

6. CONTEXT

Vale's management of HSEC and Process Safety events consists of the following stages:



Figure 5 – HSEC and Process Safety Event Management Flow

6.1 Identifying, Recording and Classifying Events:

Anyone who witnesses, experiences, or identifies an event must immediately report it to the person responsible for the activity or area.

Events must be classified according to the assumptions set out in Annexes 01 to 04 of this procedure, depending on the losses/impacts resulting from the event.

If there is any doubt about the classification of events, the 2LD (HSEOPR Board for N, P, and MA events, and Corporate Sustainability Board for C events) will be consulted on the final decision.

6.1.1 Event Recording:

The Event Recording stage consists of registering and communicating the identified events, considering the first analysis of the circumstances and consequences in order to define the initial measures for implementing immediate actions. Here are some assumptions:

- Records that must be kept:
 - All events that generate occupational injuries or illnesses in controlled and uncontrolled activities;
 - All events that generate commuting injuries in controlled activities;
 - All social loss events occurring in controlled and non-controlled activities;
 - All operational process safety events (P events);
 - All loss events related to geotechnics in controlled activities;

- All events caused by third-party companies or the community, that generate actual/potential environmental impact;
 - All events caused by Vale or its contractors that generate actual/potential environmental impact;
 - Natural events that, upon reaching Vale or its areas, cause an actual/potential environmental impact;
 - All events that cause injuries to community members, regardless of the responsibility or intentionality of the parties involved, and that occur in operations, projects, easement strips, and other areas under the responsibility of the company (e.g. on public roads used for Vale's routes or commuting) and as a result of activities, products, services, and equipment linked to Vale.
 - All events without loss/impact or which generate material loss, but which have the potential to generate loss/impact for safety, the environment, or the community in controlled activities.
- b) Records that can be made voluntarily:
- Events that generate commuting injuries in uncontrolled activities;
 - Natural events that have no environmental impact;
 - Other events and behavioral observations for organizational learning purposes.
- c) The official system for recording events at Vale is SAP-IM, via the IRIS platform.
- d) All events must be recorded within **48 hours** of the event's **occurrence**.
- e) Responsibility for recording events:
- Events with loss/impact: It is recommended that the "event owner" area carries out the registration.
 - Events without loss/impact: Any employee can register.

IMPORTANT: If there is any doubt when recording the event, it should be done taking into account the highest potential severity. After analysis and/or investigation, the record may be rectified if necessary.

6.1.2 Immediate actions (post-event):

Immediate actions must be defined for each type of event, considering its severity and types of loss/impact or potential loss/impact. Here are some assumptions:

Immediate actions include, but are not limited to:

- Notify the appropriate emergency services,
- Rescue and transport the injured person,
- Carry out environmental emergency and contingency actions,
- Activate the Community Relations team,
- Notify police/union/regulatory agencies,
- Control the scene of the event and preserve the evidence for analysis.

Note: For events with social loss, general guidelines must be observed for emergency assistance to victims and their families, including roles and responsibilities for emergency response, in accordance with PGS-005912.

6.1.3 Immediate Communication:

Immediate communication is essential to guarantee an agile, efficient and coordinated response to situations that could impact safety, operational integrity, the environment and the communities in which we operate.

Level 1 and 2 events must be reported according to the following table:

LEVEL	DEADLINE	TYPE	Specialized Services Management (Integrated Center)	HSEOR Department	Technical VP	Sustainability Department	Sustainability VP	VP (Event Owner)	President
1	2 HOURS	N, P, MA				*	*		
		C							
2	4 HOURS	N, P, MA							
		C							


Communicate 

Table 1 – Event Communication X Event Classification

* For MA events, depending on the characteristics of the impact, it is necessary to notify the Sustainability area.

In addition to Table 1, here are some assumptions:

- a) Occupational Health and Safety Events:
 - N1 events with fatalities, the owner of the area in which the event occurred must contact the Crisis and Emergency Communications Team for strategic alignment and support.
 - Any occupational fatality in a controlled activity must also be reported immediately to the Board of Directors by the VP who owns the event;
 - N1 and N2 events must be reported by the event owner to hse.corp@vale.com;
 - If the VP of the area that "owns the event" is not the same as the VP of the victim in the company's formal organizational structure, both should be notified;
 - Any injury should be reported to the local doctor immediately following its identification. In the case of events involving fatalities in a controlled or uncontrolled area, communication of the event must also follow the protocol set out in the Crisis Communication Manual.
- b) Environmental Events:
 - Environmental events described in Table 1 and listed below must be reported by the event owner or local environmental department via e-mail to hse.corp@vale.com;
 - MA3 events must be communicated within **24 hours** to the same audience as MA2;
 - Events with external notification to component bodies, as required by law, within **24 hours**;
 - Events involving media/social networks or government authorities, investors, clients, social groups and trade unions within **24 hours**;
 - The form of internal and external communication of environmental events must be defined in a local procedure. It is recommended that the Environment Board be involved in drawing up the external notification.
- c) Process Safety Events:
 - P1 and P2 events must be communicated by the event owner via e-mail to hse.corp@vale.com, gestaoativos@vale.com and to cpia.ferrosos@vale.com.
- d) Community Events:
 - C1 and C2 events must be communicated by the event owner to gestao.social@vale.com and to hse.corp@vale.com for C1 events alone.

- e) All events:
- Events involving suppliers should also be communicated to the Procurement area (SSMA Suppliers) via e-mail to hse.suppliers@vale.com.
 - The Event Owner area must inform the classification of the activity (controlled or non-controlled) in the course of which the event occurred in the initial communication.
 - It is the responsibility of the VPs to define which other events, in addition to those mentioned in Table 1, will be immediately communicated to the CEO.
 - Each unit must establish, in its local procedure, a communication flow to ensure that deadlines for immediate communication are met, as well as communication flows for other types of events that they deem necessary, including escalation by hierarchical level according to severity and compliance with legal requirements (conditions, agreements, TACs, etc.).
 - Preliminary Alerts (event notification) will be sent via e-mail.

6.1.4 Classifying Events:

Event classifications must follow the annexes to this procedure, for each specific topic. N events (Annex 01), MA events (Annex 02), P events (Annex 03) and C events (Annex 04). In cases where there are doubts regarding certain classifications in N, P and MA events, the final decision must be made by the 2LD Specialized Services area and in C events the final decision must be made by the 2LD Sustainability area, after the initial registration made by the 1LD.

Note: All events must be recorded within 48 hours of the event’s occurrence. The release of the preliminary classification (initial card) for a P event must take place after the event has been registered and within 5 business days.

6.2 Investigating Events:

Event investigation is a fundamental practice to promote a safer environment and also to continuously improve your processes and practices to achieve higher standards of performance.

The main stages are:

- Formation of the investigation team;
- Investigation planning;
- Information collection;
- Information analysis;
- Establishment of the Action Plan and definition of coverage.

This stage of the process is not mandatory for all types of events. However, the application of an investigation methodology, as well as the degree of robustness of the investigation, will depend on the level of the event, as shown in Table 2:

EVENTS	
N, MA, P and C	MA, P e C
LEVEL 1	LEVEL 3
LEVEL 2	SIMPLIFIED INVESTIGATION
COMPLETE STRUCTURED INVESTIGATION	LEVEL 4
	LEVEL 5
	RECOMMENDED INVESTIGATION ACCORDING TO LOCAL PROCEDURE

Table 2 – Investigation Methodology X Event Classification

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- For N3 and N4 events related to CARs and WITH LOSS, the Full Structured Investigation should be conducted.
- For N3 and N4 events related to CARs or WITH LOSS, at least the Simplified Investigation must be conducted.
- For other N3 events that are not related to CARs and NO LOSS, the investigation should follow the local procedure.
- For N5 events, the investigation must follow the local procedure.

Here are some BASIC assumptions for the investigation stage:

- Responsibility for recording investigation data must be defined in a local procedure.
- Events that generate multiple losses, affecting more than one dimension, **must be reported in a single investigation record** in SAP IM.
- Fatality analyses (N1) must be presented at the Executive Committee and Board of Directors meetings as soon as they are completed.
- **The investigation will last 30 days.** The registration of events requiring investigation and those that have not been closed at the time of initial registration must be supplemented with the analysis data within 30 calendar days in SAP-IM. The time will be counted from the event registration date until the investigation is closed in SAP IM, according to Step 6.3 - Close Investigation.
- In the case of analyzing N1 and N2 events, it is recommended that information be collected through interviews with professionals who know the activity/operation, Human Resources professionals and/or Human Factors professionals. It is important that the interviewers are part of the investigation team, participating in the entire process.

IMPORTANT: The investigation of some events may take longer than the timeframe determined by this procedure. In the case of level 1 and 2 events, the new deadline must be aligned with the Specialized Services Department by emailing hse.corp@vale.com, with the appropriate justifications for not meeting the deadline.

Annex 05 – Guide for Event Investigation should be consulted for more details on the responsibilities, characteristics and investigation methods to be used in event investigations.

6.3 Closing the investigation:

The investigation closing stage consists of ensuring that the previous stages have been completed and that, once the investigation is concluded, the appropriate documents **are attached to SAP-IM** and made available for history and consultation.

For **Full Structured Investigations**, the document that finalizes the investigation process is the Full Report or Simplified Report (see structures below).

For **Simplified Investigations**, it is at the discretion of the area responsible which report template to use.

Full and Simplified Report structures follow:

The Full Report must contain:

- Record of the event with a detailed description and photos;
- List with the investigation team;
- Facts and timeline;
- List of causes, including identification of the root cause;
- Main causes correlated to the VPS Element Requirements
- Action plan;
- Swiss cheese - actions identified;
- Summary of lessons learned, Comprehensive Actions and Conclusion;
- Photographic record of the event (if any);
- Other pertinent information related to the event.

The Simplified Report must contain:

- Record of the event with a simplified description and photos;
- List with the investigation team;

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- Main causes correlated to the VPS Element Requirements
- Swiss cheese - actions identified;
- Comprehensive Actions;
- Photographic record of the event (if any).

IMPORTANT: For N1, MA1 and C1 events, the Simplified Report should only be attached to SAP-IM after formal review by Vale's Legal team, which should take place via e-mail to jurSSMAC@vale.com. For international areas, this validation must be done on demand, due to local legal particularities.

Note: A template for the report can be found in Annex 06 – Guide to Event Communication.

IMPORTANT: It is recommended that the reports for N1, N2, MA1, MA2 and P1 Events be supplemented with audio/video simulations (3D Simulations) to facilitate understanding of the events and dissemination of the lessons learned. The request for the preparation of the material must be initiated during the investigation process, to the 2LD team in the Specialized Services area and/or via e-mail to hse.corp@vale.com, sending the Preliminary Notification of the Event, where a flow will be initiated to analyze the actual need for the preparation of the simulation, and if it is really necessary, the complexity of the simulation will be classified, additional necessary information requested and the delivery time negotiated.

6.4. Executing the Action Plan:

The execution of the action plan must be monitored in the routine management of the units, in order to avoid setbacks and allow any deviations to be identified as soon as possible and dealt with appropriately.

Any needs to update the data in the action plan should be carried out in SAP-IM as soon as possible, keeping the records up to date at all times.

N1 and N2 actions can only be rescheduled once and must follow the criteria below:

CRITERIA FOR EXTENDING/CANCELLING N1/N2 ACTIONS			
Extension of up to 30 days from the original expiration date	Extension of up to 60 days from the original expiration date	Extension greater than 60 days from the original expiration date	Cancellation of the action
Approval requested from the VP-2 of the area that owns the event	Approval requested from the VP-1 of the area that owns the event	Approval requested from the Vice President of the area that owns the event	Approval requested from the Vice President of the area that owns the event

Table 3 – Rescheduling and Cancellation of Actions

Note: Other criteria for rescheduling actions can be established by local procedure.

In the event of delays in the N1 and N2 action plans, automatic notifications will be sent by SAP-IM (**escalation notices**), according to the following criteria:

ESCALATION NOTICE FOR OVERDUE N1/N2 ACTIONS				
1-day delay	7-day delay	15-day delay	30-day delay	45-day delay
VP-3 of the person responsible for the action will be notified	VP-2 of the person responsible for the action will be notified	VP-1 of the person responsible for the action will be notified	Vice President of the person responsible for the action will be notified	CEO will be notified

Table 4 – Escalation Notices

Note: P1, P2, C1, C2, MA1 and MA2 events must have their action plans addressed properly.

The action plans associated with fatalities must be systematically monitored by the HSEOPR Board, which must demand the appropriate justifications and approvals from the operations responsible in the event of delay(s) or rescheduling(s).

Adequate resources to fulfill the action plans must be allocated by the responsible leaders.

In the annual budget planning for each board, in addition to the funds earmarked for improvements in the areas of health, safety, the environment and social management, the implementation of event action plans must also be taken into account.

6.5 Checking Effectiveness:

This stage aims to ensure that the action was carried out as planned and that it was effective in achieving its initial objective.

The effectiveness check must be carried out after the Action Plan has been completed by 1LD professionals with the technical capacity to evaluate the actions, and is mandatory for actions for N1, N2, MA1, MA2, C1 and C2 events. For other events, its applicability must be defined in the local procedure.

In addition, 2LD must carry out independent, sample analyses of the effectiveness checks carried out by 1LD. The deadline for carrying out this stage should be set by the area responsible for verifying effectiveness after the Action Plan has been completed. It can be between 30 and 180 days, depending on the complexity of the action or the Plan.

The effectiveness check can be carried out by action or considering the action plan as a whole, as follows:

- By conducting audits, checks or inspections focused on the action to be verified for effectiveness.
- By monitoring indicators, at an appropriate time interval, that show a trend towards resolving the originally identified deviation that gave rise to the event;
- By the absence of a record of recurrence of the event that is the subject of the action(s), after the time interval considered appropriate for each proposed action has elapsed.

If the person responsible for verifying effectiveness does not consider the action or plan to be effective, a new evaluation/cause analysis must be carried out in order to identify one or more actions to achieve the objective, and at the end of its implementation, the effectiveness analysis must be conducted again.

The event cannot be closed until the effectiveness check has been passed ("effective" status). The deadline for adding a new action is 20 days.

If the person responsible for verifying effectiveness considers the plan to be effective, the event must be closed and all the evidence proving effectiveness must be entered into SAP-IM.

Note: The effectiveness check for C1 and C2 events can be recorded according to local procedures.

6.6 Reporting statistical data and conducting critical analyses:

Once an Occupational Safety, Process Safety, Environmental and/or Community event has been recorded in the system, as mentioned in the previous steps, the statistical data reporting phase begins, which consists of giving visibility to the events that have occurred through analyses conducted using statistical methodologies for all hierarchical levels of the company. The reporting of statistical data can be divided into four stages, detailed below:



Figure 6 – Details on extracting registered data

Note: The data is extracted on a monthly basis in the process known as "Indicator closing".

6.6.1 Registering the event in the system:

The way in which a record should be registered is detailed in topic 6.1.1. However, when it comes to reporting statistical data, it is important to point out that this data and analysis reflects what is in the system, reinforcing the importance of making a complete record with as much detail as possible about the event reported.

6.6.2 Extraction of registered data:

With the exception of the first phase, "Registering the event in the system", all the others are the responsibility of HSEOPR's Corporate Data Intelligence department. Analyses and insights are generated by extracting the information registered in SAP-IM. See the table below for important details about this extraction:

Theme	Extraction date	Generated indicators
Occupational Safety	3rd busy day	TRIFR, LTIFR, N events, investigation data
Environment	3rd busy day	MA events, investigation data
Process Safety	3rd busy day	P events, investigation data
Community	3rd business day	C events, investigation data

Table 5 – Details on the extraction of registered data

Note 1: For a better understanding of the indicators addressed here, see PNR-000012: Vale Indicators Manual.

Note 2: It is important to remember that the owner of the event is not always the same area that counts the injury for indicator purposes.

It is worth noting that the extraction takes into account all events registered up to 11:59 p.m. on the second calendar day and that any changes to existing registrations made after this day and time will not be included in the closing of the month and will only be reflected in the following month's meetings, if applicable.

6.6.3 Analysis and generation of insights:

The analysis and generation of insights are carried out by the data intelligence team using statistical methodologies with the aim of supporting decision-making in management and directing strategic actions.

6.6.4 Disseminating results:

Based on the results and analysis generated during the month, some products are fed in for later dissemination. Check out this list in the table below:

Product	Disclosure via	Disclosure Date	Type of Information
Stratws	Stratws System	5th business day	Results of indicators consolidated month by month for performance meetings
Closure of Occupational Safety indicators (cockpit)	E-mail	4th business day	Accumulated pyramid and data relating to safety rates
Executive Summary	E-mail	10th business day	Visual summary of the main indicators in the area
Performance Report	E-mail	10th business day	Detailed performance of indicators
Environmental Indicators	E-mail	Day 20	Results of environmental indicators consolidated month by month for performance meetings
Community Indicators	E-mail	10th business day	Consolidated community statistical results

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External Reports (ICMM, IBRAM, WDI, ESG, Integrated Report, etc.)	As per demand	As per demand	Results of consolidated indicators
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Table 6 – Details on the dissemination of registered data

Also noteworthy is the existence of dashboards containing various analyses and consolidated indicators. The use of this data and the disseminated information, as mentioned above, is free to all Vale employees. As such, the 2LD and 1LD technical areas must carry out critical analyses based on this data, with the aim of identifying possible deficiencies and promoting continuous improvement in the processes.

6.7 Communicating Events:

Effective event communication is key to minimizing damage, protecting the company's reputation and restoring the trust of stakeholders, including customers, partners and employees.

Communicating with customers, partners, managing the public narrative to protect the company's reputation, complying with legal requirements such as notifying regulatory authorities and those affected, as well as internal audiences such as leaders and other stakeholders, must be done in a clear and transparent manner at all stages of the event management process.

In this way, we must communicate events at different stages to the right audience: Immediate communication (preliminary alert), communication throughout the investigation stage and final communication (final alert).

Annex 06 – Guide to Communication, should be consulted for more details on communication throughout the investigation stage.

7. ANNEXES

- Annex 01 – Guide for Classifying Health and Safety Events
- Annex 02 – Guide for Classifying Environmental Events
- Annex 03 – Guide for Classifying Process Safety Events
- Annex 04 – Guide for Classifying Social Events
- Annex 05 – Guide for Events Investigation
- Annex 06 – Guide to Communicating Investigation

8. GENERAL PROVISIONS:

Questions, comments and suggestions regarding this document should be sent to:

- Health, Safety, Environment and Operational Risk Board – email hse.corp@vale.com.
- Executive Department of Social Management – email: gestao.social@vale.com.