Guidelines for Fatality Prevention Programs
Introduction
Introduction

“Caring for people” is one of Vale’s five strategic pillars, which includes the pursuit of Zero Harm. Fatality Prevention Programs are one of the main initiatives of this pillar and are part of the Health and Safety strategic agenda. The importance of such Programs is due mainly to the following facts:

» Despite our extensive prevention efforts, we still have fatal incidents in our company.
» The reduction in minor/moderate/serious severity incidents rates is an important target, but is not a sufficient indicator of the potential for fatalities.
» Management Systems provide a “safety net” for people against risks, but special focus needs to always be given for situations that present the potential for fatalities.

In this way, Fatality Prevention Programs have the purpose to establish requirements so that the risks of situations with potential for fatalities are actively and continuously managed, with the commitment of the leaders and participation of the employees.

This document is a reference for the Directors to implement Fatality Prevention Programs in their Departments or to promote the review of existing Programs, reinforcing our value “Life Matters Most”.

Such Programs must ensure that existing management systems focus on fatality prevention, acting not only on frequent events of minor/moderate/serious severity, but mainly on less frequent events of critical/catastrophic severity.

The Fatality Prevention Programs are not an initiative of limited duration or “another health and safety campaign”. They are Programs that are part of our journey towards Zero Harm and should be implemented and monitored on a continuous basis, within the framework of existing management systems.

This document was developed by the Health and Safety Department, along with safety professionals from our global Business Units, initiated from existing Programs at Vale and benchmarks of the mining and metallurgy industries.

Business Units can adopt similar titles for their Fatality Prevention Programs such as “Critical Risks Program”, “Fatality Risk Prevention”, “Valuing Lives Program”, among others.
Program Scope and Planning
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Each Department must maintain a Fatality Prevention Committee, composed of leaders, with the support of the local Health and Safety area.

The Department must maintain a Fatality Prevention Program through a formal written document, that describes the phases (planning, development, verification and management review) of the Program evolution, as well as a work plan with the Department’s Program enabling action items.

The Program must consider the participation of employees in all phases of its evolution.

The Committee MAY:

» Be composed of representatives of other existing committees, provided that Fatality Prevention within the context of the Fatality Prevention Program is specifically addressed.

» If deemed necessary, establish subcommittees in Department units in order to support the Program.

The Committee MUST:

» Meet at a frequency consistent with the Department’s risk profile.

» Have a clear understanding of their role in fatality prevention efforts. Their representatives must know and understand the activities and risk situations with potential for fatalities applicable to the Department, including their main contributing factors and controls measures.

» The Director must take an active leadership role by providing strategic direction and resources, promoting a visible engagement at all levels and monitoring the progress of the Fatality Prevention Program.
Phases of the Program

**Management Review**
Periodic management review and analysis of the Program.

**Planning**
Establish, or review, the Committee and the written document for the Program.

**Verification**
Monitor the indicators.

**Development**
Act on the Key Elements of Fatality Prevention.

An implementation plan for reference can be found in the Annexes.
Development
Development

The Program should seek to ensure that existing management systems act on the **Key Elements of Fatality Prevention**:

1. Risk Management and Management of Change, through elimination/substitution of hazards and engineering control measures, prioritizing the highest risk scenarios.

2. Development of Programs, emergency plans and verifications with fatality prevention focus.


4. Engagement and development of leaders and employees, while promoting the Active Genuine Care culture¹.

¹ care for yourself, care for others, let others care for you.
In the Risk Management and Management of Changes element, we highlight:

» The implementation and maintenance of the RAC – Critical Activities Requirements.
» Taking action regarding risk situations with potential for fatalities identified mainly from the following processes:
  » Risk management of the Department.
  » Incident management, with emphasis on the risk profile of the Business Unit and Department.
  » Records of health and safety tools, mainly:
    » Risk analysis tools, such as preliminary risk analysis, field analysis, job safety analysis or other tools for non-routine tasks; observations; inspections; unsafe conditions records and evaluations of the effects of exposure to occupational health hazards.
    » Analysis of critical/catastrophic severity incidents, actual and potential, occurring at Vale and at other companies with similar scenarios.
» The application of prevention in the design of the workplace and in the organization of work, e.g. not using access through vertical ladders and hatches, and the establishment of work journey/shifts.
» The application of consistent risk assessments in the management of change processes.
» The focus on the following situations:
  » Remote and Support areas (beyond the core activities/areas).
  » Risk situations with potential for fatalities in which the control measures are absent, ineffective or considered less effective on the Hierarchy of Controls.
  » Abnormal and/or non-routine conditions, where the risks are increased and/or unexpected.
  » Hazards, risk situations and contributing factors of processes/tasks that have potential for fatalities.
» The implementation of measures of elimination/substitution of the hazards through projects/more advanced technologies and intelligent production processes, as well as engineering control measures. Such measures are the most efficient in the Hierarchy of Controls.

» The development and review of procedures for the execution of tasks, focusing on the prevention of deviations and the analysis of prescribed work versus actual work.

» Maintaining Operational Discipline, preventing gradual deviation from procedures.

» The planning of the task, taking into account the individual factors, the demands of the task, the organizational factors and the working environment.
In the Development of Programs, verifications and emergency plans with fatality prevention focus element, we highlight:

» The implementation and maintenance of Programs that have a relation to fatality prevention, for example, Fatigue Prevention, Environmental Risk Prevention, Malaria Prevention, Prevention and Treatment of Chemical Dependency and Prevention of Misuse of Alcohol and Drugs.
» Inspection and audit processes, especially at tasks level.
» The implementation and maintenance of emergency response plans, in addition to the availability of resources and drills.

In the Sharing and application of organizational learning for fatality prevention element, we highlight:

» The use of the Incident Management System.
» The appropriate reporting and analysis of incidents and deviations for organizational learning and continuous improvement.
» The distribution and application of lessons learned and best practices with focus on fatality prevention.
» Applicability Analysis of critical and catastrophic severity incidents, actual or potential, that have occurred in other Departments.
» The reporting and sharing of information related to fatality prevention to employees through communication activities including: workplace dialogues, meetings, training sessions, information boards, etc.
In the Engagement and development of leaders and employees, while promoting the Active Genuine Care culture element, we highlight:

» The development of actions towards an interdependent health and safety culture.

» The application of actions related to fatality prevention: Day of Reflection, Safety Week, Health Week, Golden Rules, among others.

» The “Visible and Perceived Leadership” in the daily routine of leaders.

» The education of leaders and employees in fatality prevention, including the identification of hazards and risk situations with critical/catastrophic potential severity and behavioral safety matters.

» The monitoring of actions related to fatality prevention from Employee Engagement Surveys.

» The development of actions towards an interdependent health and safety culture.
Verification
Verification

The Program must establish a monitoring strategy, with at least a monthly frequency, of fatality prevention related indicators.

The main topics that MAY be used as indicators are:

» Compliance with the RAC – Critical Activities Requirements Protocol.
» Employees exposed to critical activities.
» Employees exposed to carcinogenic agents.
» Critical/catastrophic severity hazards identified versus solved (controlled or eliminated).
» Monitoring of High and Very High Risk Scenarios.
» Results of exposure to occupational hygiene risks with potential for fatalities.
» Compliance with plans of implementation of specific control measures (for example, minimum standards/requirements).
» Critical/catastrophic severity potential incidents.
» Indicators related to the educational development of leaders and employees.
» Indicators related to organizational culture and climate surveys.
» Best practices implemented related to fatality prevention.

Some examples of charts used in existing Programs can be found in the Annexes.
Management Review
Management Review

The Fatality Prevention Program must establish a periodic management review in order to evaluate its progress and identify opportunities for continuous improvement.
Leadership Matters
Leadership Matters

The actions of Senior Leaders are fundamental to fatality prevention. Strong and consistent leadership that demonstrates – every day – a continuous commitment to safe production will drive us to zero fatalities.

Visible and Perceived Leadership

The “Visible and perceived Leadership” on the daily routine of the leaders is one of the highlights in the key elements of fatality prevention and consists of:

» Being authentic in your belief about every person going home safe and healthy everyday – show you care about them.
» Engage and interact frequently with people and processes.
» Understanding your role as a listener, teacher, trainer, coach, motivator and mentor.
» Being committed and tenacious about spending time in the workplace.
» Actively coach others on behaviours and processes.
» Being clear about your expectations regarding safe work.
» Showing passion for what you are doing in the workplace.
» Recognizing individuals, teams or groups at every opportunity.
» Removing barriers for safe work and strong morale.
» Walking the talk – your behaviors reflect the values of the organization.
Actions for Leaders

There are three groups of actions that should Guide leaders in fatality prevention:

1. Live the vision of Zero Fatalities

   » Communicate a deliverable vision for fatality elimination.
   » Challenge your own knowledge and that of others on the contributing factors and fatality prevention. Seek out expertise and share learnings from others.
   » Set an example for others to follow that shows you actively genuinely care, and that is consistent, unambiguous and relentless in approach.
   » Consistently demonstrate that fatalities are unacceptable and hold people at all levels accountable for prevention.
   » Talk about fatalities as people and make clear your personal commitment to prevention.
   » Be credible. Follow through and do what you say you will do.
   » Engage in inspections and safety discussions at all levels. Focus on fatal risks.
2. Focus on the incidents with potential for fatalities
   » Personally understand the fatal risk profile of your business and engage in discussions around potential fatal occurrences.
   » Focus on operational details. During site visits and operational discussions question and verify whether the critical controls to prevent fatalities are in place.
   » Participate in fatality potential incident analysis and lead related discussion at your meetings.
   » Question whether the focus of behavioral observation processes also addresses fatality prevention.
   » Ensure that contributing factors of critical/catastrophic severity potential incident are truly understood, and that they are fully addressed.
   » Respond to potential fatal incidents as you would an actual fatal incident.

3. Recognize fallibility
   » Maintain a sense of constant vulnerability. Never assume fatalities will not occur.
   » Make no assumptions on critical issues. Conduct ad-hoc tests on critical controls and seek expert advice.
   » Understand the motivators of operational procedures deviation with fatality potential, acting on its prevention in an effective way.
   » Assess the competence of the crews to respond to abnormal conditions.
   » Consider the consequences of strategic decisions on the probability of fatalities.
Questions for Leaders

Finally, the key questions that a leader should ask himself about fatality prevention are:

» Am I aware of the processes and tasks that can result in fatalities in my area? Have I been working in the risk management of such processes and tasks?

» Am I aware of the actual and potential fatalities, occurring at Vale and outside the Vale? Have I been discussing such incidents with my teams assessing whether there are similar situations and possible actions in my area?

» Do I encourage the reporting and genuine analysis of incidents, especially those with critical/catastrophic severity potential for the purposes of organizational learning and continuous improvement?

» Have I been working in the maintenance of management systems focusing on fatality prevention?

» Have I personally been in the workplaces, talking to people and promoting the culture of Active Genuine Care?

» Have I been exercising the “Visible and Perceived Leadership” in my daily routines?
Final Considerations
Final Considerations

At Vale, life matters most – at work and beyond. Health and safety efforts should not be limited to the workplace. Every day, everywhere Vale operates, we are part of people’s lives, playing a role in hundreds of thousands of stories in our communities. Homes, schools, roads, public areas and work sites can be transformed by our active participation. All of us are “risk managers” of our own lives; the procedures we learn at work can also protect those that we care about at home. We should be role models in our families, circles of friends, neighborhoods, and communities, positively influencing people as we live, learn, work and play.
References
References

The following references were used to develop this document:

» Guides:
  » Leadership Matters – Managing Fatal Risk Guidance, ICMM
  » Leadership Matters – The Elimination of Fatalities, ICMM

» Articles:
  » Determining Serious Injury and Fatality Exposure Potential, Don Martin & Scott Stricoff
  » Preventing Serious Injuries & Fatalities, Fred Manuele
  » Preventing Serious & Fatal Injuries During Project Execution, Theodore Apking
  » New findings on serious injuries and fatalities, BST
  » A New Paradigm for Fatality Prevention, Thomas Krause

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Questions related to this document should be forwarded to Health and Safety Department through the e-mail apoio.saude.seguranca@vale.com
Annexes
## Implementation Plan

<table>
<thead>
<tr>
<th>Implementation Plan</th>
<th>Months</th>
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<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9  10  11  12</td>
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<tr>
<td>Establish the Committee</td>
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<tr>
<td>Committee kick off meeting</td>
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<tr>
<td>Establish the written document for the Program</td>
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<tr>
<td>Present the Program to all Leaders</td>
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<tr>
<td>Monitor the Indicators</td>
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<tr>
<td>Management Review of the Program</td>
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Chart 1
Compliance with the RAC – Critical Activities Requirements Protocol

RAC 01 Working at Heights
- 2012: 52%
- 2013: 61%
- 2014: 70%

RAC 02 Automotive Vehicles
- 2012: 61%
- 2013: 64%
- 2014: 80%

RAC 03 Mobile Equipments
- 2012: 80%
- 2013: 83%
- 2014: 90%

RAC 04 Lockout and Tagout
- 2012: 35%
- 2013: 55%
- 2014: 70%

RAC 05 Lifting of Loads
- 2012: 70%
- 2013: 73%
- 2014: 75%

RAC 06 Confined Spaces
- 2012: 90%
- 2013: 93%
- 2014: 95%

RAC 07 Machine Guarding
- 2012: 42%
- 2013: 43%
- 2014: 45%

RAC 08 Ground Stability
- 2012: 80%
- 2013: 87%
- 2014: 90%

RAC 09 Explosives
- 2012: 88%
- 2013: 88%
- 2014: 90%

RAC 10 Working with Electricity
- 2012: 35%
- 2013: 40%
- 2014: 55%

RAC 11 Molten Metal
- 2012: 85%
Chart 2
Monitoring of High and Very High Risk Scenarios

January 2014
- Low: 348
- Medium: 60
- High: 5

February 2014
- Low: 382
- Medium: 58
- High: 5

March 2014
- Low: 393
- Medium: 51
- High: 4

April 2014
- Low: 403
- Medium: 46
- High: 4

May 2014
- Low: 404
- Medium: 43
- High: 4

June 2014
- Low: 415
- Medium: 30
- High: 3

July 2014
- Low: 426
- Medium: 23
- High: 2

August 2014
- Low: 416
- Medium: 16
- High: 1

September 2014
- Low: 429
- Medium: 16
- High: 1

Legend:
- Low
- Medium
- High
- Very High
Chart 3
Critical/catastrophic severity potential incidents

<table>
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<tr>
<th></th>
<th>1st Trim</th>
<th>2nd Trim</th>
<th>3rd Trim</th>
<th>4th Trim</th>
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<tr>
<td>2013</td>
<td>26</td>
<td>19</td>
<td>20</td>
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<td>2014</td>
<td>10</td>
<td>11</td>
<td>13</td>
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Chart 4
Best practices implemented related to fatality prevention

<table>
<thead>
<tr>
<th>Month</th>
<th>Other Safety Best Practices</th>
<th>Safety Best Practices with focus on Fatality Prevention</th>
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<tr>
<td>January 2014</td>
<td>4</td>
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<td>March 2014</td>
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<td>April 2014</td>
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<td>2</td>
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<td>July 2014</td>
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<tr>
<td>August 2014</td>
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<td>1</td>
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<tr>
<td>September 2014</td>
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<td>1</td>
</tr>
<tr>
<td>October 2014</td>
<td>8</td>
<td>1</td>
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### Chart 5

#### Employees exposed to critical activities

<table>
<thead>
<tr>
<th>RAC</th>
<th>Activity</th>
<th>1st Trim</th>
<th>2nd Trim</th>
<th>3rd Trim</th>
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<tr>
<td>RAC 01</td>
<td>Working at Heights</td>
<td>9.431</td>
<td>9.395</td>
<td>9.319</td>
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<td>RAC 02</td>
<td>Automotive Vehicles</td>
<td>8.879</td>
<td>8.932</td>
<td>9.041</td>
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<td>Mobile Equipments</td>
<td>9.933</td>
<td>9.950</td>
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<td>Lockout and Tagout</td>
<td>13.608</td>
<td>13.215</td>
<td>13.077</td>
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<td>Lifting of Loads</td>
<td>9.693</td>
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<td>Confined Spaces</td>
<td>3.457</td>
<td>3.143</td>
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<td>229</td>
<td>248</td>
<td>267</td>
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<td>RAC 10</td>
<td>Working with Electricity</td>
<td>2.634</td>
<td>2.430</td>
<td>2.339</td>
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Chart 6
Compliance with plans of implementation of specific control measures (for example, minimum standards/requirements)
For a world with new values.