WHS DOCUMENTS & TEMPLATES

DOC-MGV-CCV · Mine Gases and Ventilation Critical Control Verification Pack

Product Overview

For: Underground mines: WHS advisers, ventilation officers, mining and electrical engineers, shift supervisors and control owners

Version 1.0 · 15 November 2026

SAMPLE

Field-ready Critical Control Verification forms for mine gases and ventilation: one for each of the 13 critical controls that stop a harmful exposure to, or ignition of, mine gases underground, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

Most workplaces have controls for mine gases and ventilation: main and auxiliary fans, ventilation doors and stoppings, fixed and personal gas detectors, re-entry gas testing and self-rescuers. The question is whether they are working today. A critical control verification (CCV) is the proof: a planned check, in the field, that a control that matters most is in place, in good condition, working as designed, used properly and not bypassed.

This pack gives you one CCV form for each of 13 critical controls (9 preventing, 4 mitigating) for the unwanted event: exposure to or ignition of mine gases, or loss of ventilation, underground. Each form shows where the control sits on the bowtie, what it must achieve, how it fails, and a checklist scored Pass, Fail or Non-conformance. Physical controls are Pass or Fail only; Non-conformance is kept for administrative items such as records and training dates. A Fail stops the work and is escalated as a high potential incident. The last page of each form has prompts for talking to the operators, workers and supervisors who use the control.

The full bowtie shows every control on one page, the schedule sets who verifies each one and how often, and the guide explains the method. Every form is editable, so you can adapt it to your site. Made by Orana Skills Centre.

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How to Use These CCVs

Mine Gases and Ventilation Critical Control Verification Pack

What a critical control verification is

The key word here is proof. Not assumption, not guesswork. A critical control verification (CCV) is a planned check, in the field, that one critical control is doing its job. It checks that the control:

- Exist
- Are in place and in good condition
- Are functioning as designed
- Are being used properly
- Are not being bypassed or failing silently

Each CCV form tests one control against its performance requirements, item by item, grouped by those five checks and then the records. It is not a general inspection, an audit, or a maintenance check: keep those, and use the CCVs alongside them for the few controls that matter most.

The bowtie and the critical controls in this pack

Hazard: Mine gases, coal dust and diesel exhaust in underground air. Unwanted event: Exposure to or ignition of mine gases, or loss of ventilation, underground. Underground mines, metalliferous and coal, and the shafts, declines and drives that serve them, wherever people work in air that depends on mechanical ventilation, or where methane, carbon monoxide, hydrogen sulphide, low oxygen, blasting fumes, diesel exhaust or coal dust may be present. Your site's ventilation principal hazard management plan, gas management plans and trigger action response plans come first: use these forms to verify the controls they set.

CCV	Critical control	Type	Sits on	At your site
CCV-01	Ventilation delivers the designed air to every working place	Preventing	T1	Use at every site where the threat or consequence is present.
CCV-02	Main and booster fans running, monitored and alarmed	Preventing	T2	Use at every site where the threat or consequence is present.
CCV-03	Auxiliary fans and ducting delivering air to the face	Preventing	T1, T2	Use at every site where the threat or consequence is present.
CCV-04	Ventilation doors, stoppings and regulators intact and set	Preventing	T2	Use at every site where the threat or consequence is present.
CCV-05	Fixed gas monitoring with alarms and power trips acted on	Preventing	T3, T4	Use at every site where the threat or consequence is present.
CCV-06	Personal and portable gas detectors carried, tested and used	Preventing	T3, T5	Use at every site where the threat or consequence is present.
CCV-07	Gas drainage working where the seam or ground requires it	Preventing	T3	Use only where the mine needs gas drainage, mainly gassy coal mines.
CCV-08	Ignition sources controlled where flammable gas or coal dust may be present	Preventing	T4	Use where flammable gas or coal dust may be present. Set the hazardous zones with your engineers.
CCV-09	Re-entry after firing or a fan stoppage only after gas testing	Preventing	T5	Use at every site where the threat or consequence is present.
CCV-10	Stone dust and explosion barriers maintained in coal mines	Mitigating	C2	Coal mines only. Drop it in a metalliferous mine unless the site has a combustible dust hazard.

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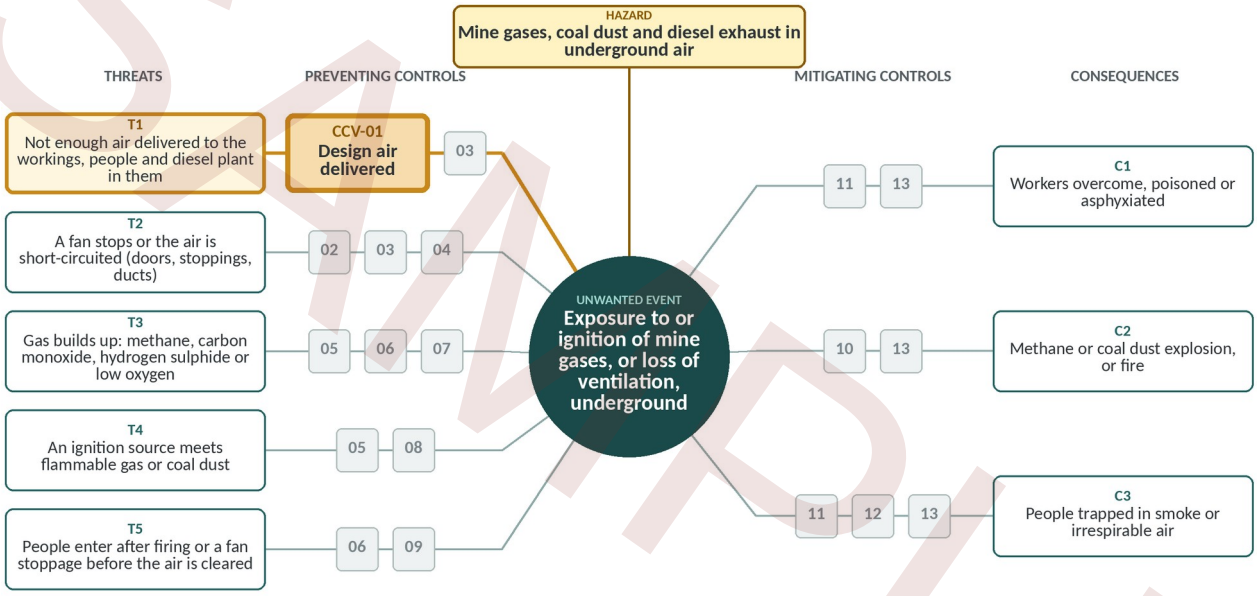
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CCV-01 Ventilation delivers the designed air to every working place

Critical Control Verification · Preventing control · Mine gases and ventilation

Site or location		**Plant or area verified**	
Date and time		**Shift**	
Verified by (name and role)		**Control owner**	

1 Where this control sits on the bowtie



Amber: this control, CCV-01, on threat line T1. Grey numbers: the other critical controls in this pack. Preventing controls sit left of the unwanted event and stop it happening; mitigating controls sit right of it and limit the harm.

2 The control

Control	Ventilation delivers the designed air to every working place
Type	Preventing: it stops the unwanted event happening.
It sits on	Threat T1: Not enough air delivered to the workings, people and diesel plant in them
Hierarchy of control	Engineering
Objective	Deliver at least the air quantity and velocity in **[Ventilation design]** to every working place and diesel unit, proven by regular ventilation surveys, with any shortfall acted on before work goes on.
Why it is critical	Ventilation dilutes and removes gas, dust, blasting fumes, heat and diesel exhaust. If the air does not reach the face in the quantity the design needs, contaminants build up, often without anyone noticing until someone is affected.

3 Performance requirements

What the control must achieve. The checklist in part 5 tests each one.

No.	The control must meet this requirement
R1	Air quantities are measured at each working place and main airway at the interval the ventilation plan sets.

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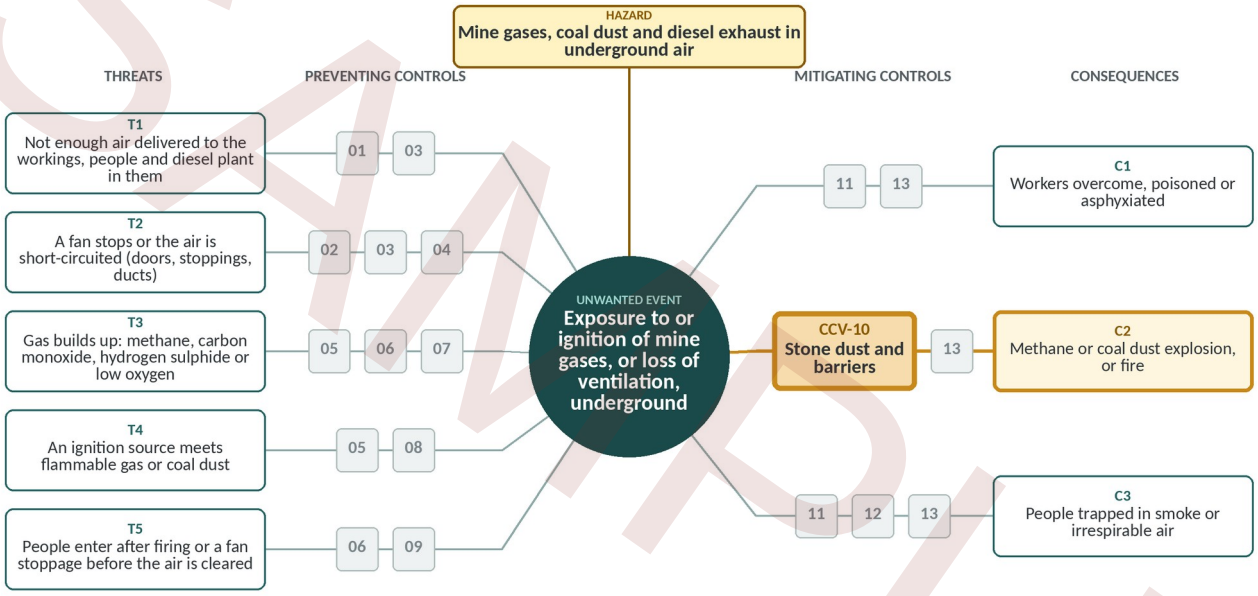
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CCV-10 Stone dust and explosion barriers maintained in coal mines

Critical Control Verification · Mitigating control · Mine gases and ventilation

Site or location		**Plant or area verified**	
Date and time		**Shift**	
Verified by (name and role)		**Control owner**	

1 Where this control sits on the bowtie



Amber: this control, CCV-10, on consequence line C2. Grey numbers: the other critical controls in this pack. Preventing controls sit left of the unwanted event and stop it happening; mitigating controls sit right of it and limit the harm.

2 The control

Control	Stone dust and explosion barriers maintained in coal mines
Type	Mitigating: it limits the harm once the unwanted event has happened.
It sits on	Consequence C2: Methane or coal dust explosion, or fire
Hierarchy of control	Engineering
Objective	Stop a methane ignition growing into a coal dust explosion that travels through the mine, by keeping roadway dust inerted with stone dust to **[Stone dust standard]**, proven by sampling, and keeping explosion barriers in place and loaded as required.
Why it is critical	A small methane ignition can raise coal dust into the air and ignite it, and the explosion can travel the length of the mine. Stone dust and explosion barriers are what stop it spreading.

3 Performance requirements

What the control must achieve. The checklist in part 5 tests each one.

No.	The control must meet this requirement
R1	Roadways are stone dusted to **[Stone dust standard]**, including the roof, ribs and floor.

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END OF THE FREE SAMPLE

This sample shows a few pages, so you can judge the layout and the quality. Field-ready Critical Control Verification forms for mine gases and ventilation: one for each of the 13 critical controls that stop a harmful exposure to, or ignition of, mine gases underground, or limit the harm when it happens, with the bowtie, a verification schedule and a short guide.

What the full product contains

- **13 Critical Control Verification forms, one per critical control (9 preventing, 4 mitigating): each with its bowtie, objective, performance requirements, failure modes, a Pass / Fail / Non-conformance checklist, the overall result, actions, a page of prompts for talking to the people who use the control, and sign-off**
  03_CCV_FORMS/ (Word and PDF)
- **The critical controls: CCV-01 Design air delivered (preventing); CCV-02 Main fans running (preventing); CCV-03 Auxiliary air at the face (preventing); CCV-04 Doors and stoppings (preventing); CCV-05 Fixed gas monitoring (preventing); CCV-06 Personal gas detectors (preventing); CCV-07 Gas drainage (preventing); CCV-08 Ignition sources controlled (preventing); CCV-09 Gas-tested re-entry (preventing); CCV-10 Stone dust and barriers (mitigating); CCV-11 Self-rescuers (mitigating); CCV-12 Refuges ready (mitigating); CCV-13 TARPs and mine rescue (mitigating)**
  03_CCV_FORMS/CCV-01 to CCV-13
- **The full bowtie for mine gases and ventilation on one page: every threat, consequence and critical control**
  02_BOWTIE/Mine Gases and Ventilation Bowtie.docx and .pdf
- **The CCV schedule: who verifies each control, how often by exposure, the method and the record**
  04_CCV_SCHEDULE/CCV Schedule.docx and .pdf
- **The CCV schedule workbook: suggested frequency by exposure, next due dates and status by formula, dropdowns, no macros**
  04_CCV_SCHEDULE/CCV Schedule.xlsx
- **How to use these CCVs: the method, scoring, the response to a Fail or Non-conformance, frequency, and adapting the set to your site**
  01_START_HERE/How to Use These CCVs.docx and .pdf
- **Read Me First, Product Overview, Permitted Use Terms and Version Information**
  01_START_HERE/ (PDF)

Formats

- Word (.docx), editable, with your logo and business name in the header
- Excel (.xlsx), editable, with dropdowns and formulas (no macros)
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