

Mining and Quarrying Safety and Health Act 1999

Guidance Note QGN 02

Isolation Procedures

**for protecting persons working on plant
at metalliferous mines and quarries**



January 2005

GUIDANCE NOTE QGN 02

ISOLATION PROCEDURES

This Guidance Note has been issued by the Safety and Health Inspectorate of the Department of Natural Resources and Mines to provide guidance in the use of isolation procedures to manage the risk associated with work on plant.

This Guidance Note is not a Guideline as defined in the *Mining and Quarrying Safety and Health Act 1999*. In some circumstances, compliance with this Guidance Note may not be sufficient to ensure compliance with the requirements in the legislation.

Guidance Notes may be updated from time to time. To ensure you have the latest version, either check the Department of Natural Resources and Mines website [**www.nrm.qld.gov.au**](http://www.nrm.qld.gov.au) or contact your local inspector of mines.

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1 PURPOSE.

The purpose of this Guidance Note is to provide practical guidance to companies, employers and employees about the use of isolation procedures to protect persons working on plant.

This Guidance Note does not prevent other ways of achieving an acceptable level of risk from being adopted and followed when persons are working on plant.

2 SCOPE.

This Guidance Note applies to isolation procedures designed to protect a worker from unexpected energisation, start-up, or release of energy, while he or she is working on plant. It covers:

- (a) isolation where locking and tagging is not necessary;
- (b) personal isolation where it is practicable for the worker to personally isolate the plant, and the worker is competent to do so;
- (c) group isolation where the actual isolation should be carried out by a worker with appropriate competencies on behalf of other workers.

This Guidance Note does **not** cover:

- (a) normal plant operation;
- (b) minor servicing tasks;
- (c) live work procedures;
- (d) permits to work procedures;
- (e) out of service procedures.

See Sections 3.3 to 3.6 for brief discussions of these matters.

3 APPLICATION FRAMEWORK.

3.1 Hazards associated with plant.

During routine operations, persons will normally be protected from contact with significant sources of energy associated with plant by the usual hazard controls (separation, guarding, other engineering controls and administrative controls), or because the source of energy is contained within the plant. When work has to be carried out on the plant (during installation, servicing, maintenance, repair, cleaning, dismantling, etc.), the usual hazard controls can not always be used. In particular, guards, interlocks and other safety devices may have to be removed or by-passed, and workers may have to enter or place parts of their bodies in hazardous areas of the plant. In these cases, alternative ways to protect workers become necessary.

When working on plant, protection is needed from:

- (a) movement or operation of the plant itself;
- (b) movement of materials handled by the plant;
- (c) contact with energy used to operate the plant;

- (d) contact with energy used to carry out processes in the plant;
- (e) contact with energy produced or carried by the plant;
- (f) contact with energy stored within the plant.

The forms of energy involved may include:

- (a) electrical energy (electrical power supply, static charges, batteries, capacitors);
- (b) mechanical energy (mechanical drives, moving and rotating machinery);
- (c) pressure energy (compressed air, vacuum, hydraulics);
- (d) gravitational energy (counterweights, vehicle runaways, hung-up material, etc.);
- (e) potential energy (springs, structural strain);
- (f) thermal energy (hot or cold surfaces and substances, heat radiation);
- (g) noise;
- (h) vibration;
- (i) non-ionising radiation (lasers, welding, electro-magnetic fields, microwaves);
- (j) ionising radiation (X-rays, radioactive sources);
- (k) hazardous substances (corrosive, poisonous, asphyxiant, flammable, explosive, chemically reactive substances);
- (l) biologic hazards (bacteria, insects, reptiles, etc.).

3.2 Isolation procedures for work on plant.

In general, when work is being carried out on plant, it is necessary for the workers to protect themselves from sources of energy associated with the plant by following an isolation procedure.

The isolation procedure shall provide for each worker involved to personally ensure that energy sources associated with the plant are isolated, dissipated or restrained, and continue to be isolated, dissipated or restrained until the worker stops work on the plant.

Work on plant varies widely in its nature and complexity, and a single isolation procedure can not provide the protection and flexibility required to cover all situations. To provide this flexibility, three processes for use in different circumstances are given in Sections 4.2 to 4.4. The criteria for the choice of process are covered in Section 4.1.

Note: The examples of isolation processes given in Section 4 cover the general process. In cases where shutting down an item of plant or isolating, dissipating and restraining the energy associated with it is not straightforward, it may be necessary to use additional standard work instructions or procedures for these steps.

Note: Isolation procedures are intended to give individual workers the controls they need to ensure their own protection while working on plant. Isolation procedures are not intended to give protection to any other person, nor are they intended to protect items of plant.

Standards covering isolation procedures include:

- AS 4024.1 – 1996 *Safeguarding of machinery Part 1: General principles Section 14 Isolation and energy dissipation.*
- OSHA Standard 29 CFR 1910.147 *The control of hazardous energy (lockout / tagout).*

3.3 Minor servicing tasks.

During normal operation of plant, it is often necessary to carry out minor tool changes, adjustments and minor servicing. Such work may be carried out without isolation if:

- (a) it is routine, repetitious and integral to the use of the plant;
- (b) the work is performed using alternative means to provide effective protection to the workers involved;
- (c) the workers carrying out the work are competent to do so.

Note: Minor servicing procedures are not covered in this Guidance Note.

3.4 Live work.

In some circumstances, it is necessary to work on plant when the sources of energy to it have not been isolated. Work such as adjustment, monitoring, fault tracing, some kinds of maintenance, replacement of components, etc. may require the plant to be energised or operated. In other cases, it may be necessary to keep the plant operating to ensure continuity of service, or it may not be practicable to shutdown the plant. Any such work on live plant shall only be carried out in strict accordance with procedures carefully designed to ensure the safety of the workers involved.

Note: Live work procedures are not covered in this Guidance Note.

3.5 Permits to work.

In some situations, isolation is not the only precaution required and a system of permits to work may be needed to ensure full control of the work being carried out. These may specify the methods and equipment to be used, the competency of the persons carrying out the work, and other necessary precautions. Such work may include “hot jobs”, work in confined spaces, excavations near buried utility lines, etc.

Note: Permit to work procedures are not covered in this Guidance Note.

3.6 Out of service.

When plant becomes unfit for use or would otherwise create an unacceptable level of risk if used, all persons who may be harmed by the plant need to be warned of the condition of the plant, and the plant needs to be prevented from being used. As far as practicable, this should be done by following an out of service procedure.

Note: Out of service procedures are covered in another Guidance Note.

3.7 Legal requirements.

Section 36 (2) of the *Mining and Quarrying Safety and Health Act 1999* imposes obligations on workers and other persons at a mine or quarry to manage the risk of injury or illness, so that the risk is at an acceptable level. Each person must manage risk in their own work and ensure it is managed in any work under their control,

supervision or leadership. Workers and other persons on site are also required to comply with the operation's procedures and standard work instructions.

Work on plant is the most common class of activity associated with lost time injuries in the mining and quarrying industry. Too frequently in this type of work, lack of adequate hazard control leads to serious injury or illness, maiming and death. The level of risk can only be kept to an acceptable level if appropriate isolation procedures are used when working on plant.

The *Mining and Quarrying Safety and Health Regulation 2001* has the following specific requirements relevant to isolation procedures:

“PART 4 – ELECTRICAL

Isolation facilities

27.(1) *The operator and site senior executive must ensure each item of electrical equipment used at the mine has a full current isolation facility in a location that is easily accessible by a person required to carry out the isolation.*

(2) The operator and site senior executive must also ensure the isolator is –

- (a) clearly marked or labelled as the isolator for the plant: and*
- (b) compatible with the mine's isolation and lock-out procedures.*

PART 10 – PLANT GENERALLY

Isolation facility

103 (1) *If, having regard to the nature and level of risk from plant used at a mine, it is necessary for managing the risk, the site senior executive must ensure the plant has a facility for –*

- (a) preventing its operation;*
- (b) preventing or controlling the release of its stored energy; or*
- (c) isolating its energy supply.*

(2) The site senior executive must ensure the facility is capable of being locked-out and tagged or otherwise secured.

Operating plant

106 *A person who has an obligation under the Act to manage risk at a mine in relation to the operation of plant must ensure the plant is not operated –*

- (a) in a way that creates an unacceptable level of risk; or*
- (b) if inspections, tests or monitoring show the plant is unfit for use; or*
- (c) if the plant is locked-out and tagged.*

Isolating, locking-out and tagging plant

107 (1) *A mine's safety and health management system must provide for the following–*

- (a) isolating plant, including effectively isolating plant to control the risk from a release of energy;*
- (b) taking plant out of service;*
- (c) testing plant or its energy source for zero potential;*
- (d) returning plant to service.*

(2) *The site senior executive for a mine that is not required to have a safety and health management system must ensure the mine has a standard work instruction for the activities mentioned in subsection (1)(a) to (d).*

(3) *If the safety or health of a person is directly affected by the operation or non-operation of plant, the system or standard work instruction must also provide for locking-out and tagging the plant.”*

4 TECHNICAL GUIDANCE – ISOLATION.

4.1 General isolation process.

To protect people working on plant from sources of energy associated with the plant, the following isolation process is necessary:

- stop the plant;
- isolate, dissipate or restrain the energy sources;
- lock and tag or otherwise ensure that the plant can not be re-energised;
- verify that the isolation, dissipation and restraints are effective;
- work on the plant;
- remove any locks and tags;
- re-energise the plant.

The precise content of an isolation procedure and its constituent standard work instructions for any particular site will have to allow for the specific conditions and requirements of that site. The procedure also needs to be suitable for the nature of the particular work being done.

The following sub-sections contain examples of matters that need to be considered and provided for in isolation procedures.

4.2 Choice of particular isolation process.

To cover the varied range of work on plant, three examples of variations on the general isolation process are given in Sections 4.2, 4.3 and 4.4. The choice of process will depend on the particular circumstances of the job.

In work on plant where:

- (a) isolation, dissipation or restraint of energy sources is carried out by physical removal or separation of plant components; and
- (b) each worker can keep the means of isolation, dissipation and restraint under continuous observation and control;

then a simple isolation procedure following the process steps in Section 4.2 may be used.

Note: Such work might include the maintenance of power tools and the servicing of light vehicles.

Note: In these cases, it may not be necessary or practicable to lock and tag energy sources. Isolation can be achieved by unplugging power leads, disconnecting pipelines and hoses, or removing vehicle ignition keys. Re-energisation of the plant can be

effectively prevented, without the need for locking and tagging out, by coiling up power leads or hoses, or by personally holding vehicle ignition keys.

In work on plant where:

- (a) each worker involved does not have direct close control of the means of isolation, dissipation and restraint; and
- (b) not more than a few energy sources are involved; and
- (c) not more than a few workers are involved and they can easily liaise with each other during the work; and
- (d) the work will be completed by the end of the shift; and
- (e) all workers involved are competent to personally carry out or check the isolations required;

then a personal isolation procedure following the process steps in Section 4.4 or an equivalent should be used.

Note: Such work will include most routine maintenance and similar tasks carried out by individual workers or by small groups.

Note: In these cases, the plant involved should be fitted with isolating switches on electrical power sources, and other suitable devices on other sources of energy.

In work on plant where:

- (a) more than a few energy sources are involved; or
- (b) more than a few workers are involved; or
- (c) the work will take longer than one shift to complete; or
- (d) not all workers have the specialised technical competence to personally carry out the isolations required;

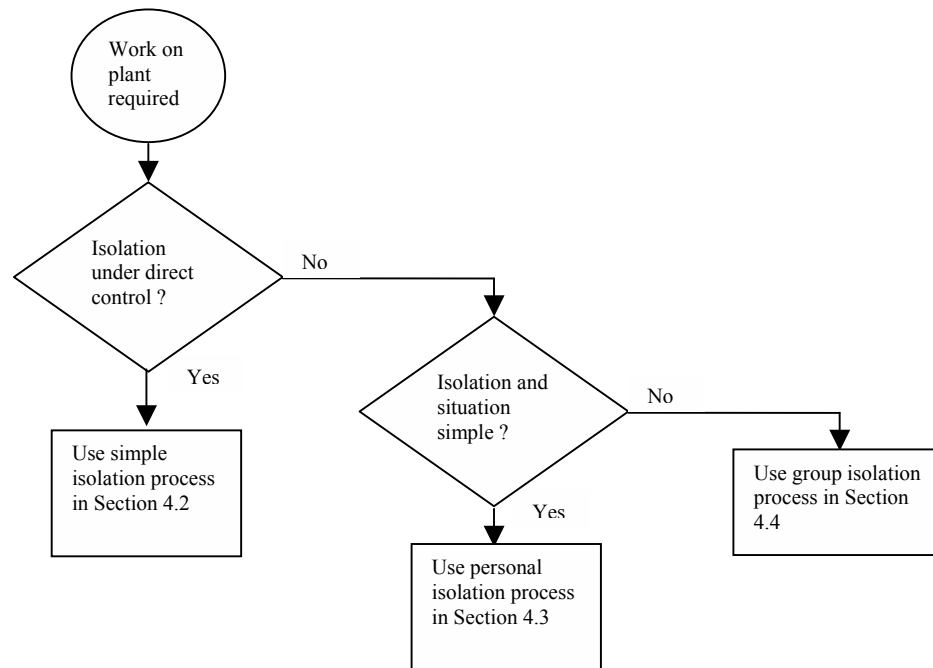
then a group isolation procedure following the process steps in Section 4.4 or an equivalent shall be used.

Note: Such work will include major maintenance work, major construction or modification work to large treatment plants, work on high voltage electrical installations, etc.

Note: In these cases, it is only practicable for the isolation, dissipation and restraint of energy sources to be carried out by a single worker designated for that purpose. However, it is still necessary to give each other worker involved the means (through the use of the lock-box) to ensure that the plant is not re-energised until he or she has stopped work on the plant.

Whichever isolation process is to be used, the procedure and standard work instructions for it shall be designed to achieve the process steps in the following sub-sections.

Figure 1: Choice of isolation process.



4.3 Isolation process where locking or tagging is not necessary.

To determine if this process is suitable for the type of work to be carried out, see Section 4.1 above.

A: Identification of sources of energy.

The worker shall personally identify:

- (a) all significant sources of energy coming into the plant;
- (b) all significant sources of energy contained within the plant;
- (c) any plant or contents likely to move.

Note: Energy fed into the plant may have more than one source and supply line.

B: Isolation, dissipation and restraint of energy sources.

The worker shall bring the plant to a safe state to work on by, as appropriate:

- (a) stopping the plant in a controlled manner;
- (b) isolating any sources of energy feeding the plant;
- (c) dissipating any sources of energy contained within the plant;
- (d) restraining the plant, materials, and any other sources of energy that can not be dissipated.

Note: In these cases, isolation may only involve unplugging power leads, disconnecting air hoses, turning off and removing the ignition keys of vehicles, etc.

C: Verifying the effectiveness of energy controls.

The worker shall verify the effectiveness of the isolation, dissipation and restraint of energy sources.

Note: Verification may be done by visually checking the energy controls, by attempting to start the plant, or by other suitable tests.

D: Working on the plant.

The worker may then carry out work on the plant. While doing so, the worker shall ensure that no other person re-energises the plant.

Note: The worker can prevent others from re-energising the plant by keeping the leads, hoses or keys close by and under the worker's direct control.

E: Re-energising and returning the plant to service.

After the work on the plant is complete, the worker shall check and ensure that the plant is clear of tools, equipment, materials and persons who may be affected before the plant is re-energised and returned to service.

F: Action if plant is not fit to return to service.

If the worker stops work on the plant without finishing his or her tasks,

or otherwise leaves the plant unfit for use, he or she shall then follow an out of service procedure or otherwise ensure that the plant is kept out of operation.

4.4 Personal isolation process.

To determine if this process is suitable for the type of work to be carried out, see Section 4.1 above.

A: Identification of sources of energy.

A worker intending to work on plant shall personally identify:

- (a) all significant sources of energy coming into the plant;**
- (b) all significant sources of energy contained within the plant;**
- (c) any plant or contents likely to move.**

Note: Energy fed into the plant may have more than one source and supply line.

B: Isolation, dissipation and restraint of energy sources.

Each worker shall either personally bring the plant to a safe state to work on, or if other workers are also working on the same plant, personally check that this has been done by another worker. The plant shall be brought to a safe state by, as appropriate:

- (a) stopping the plant in a controlled manner;**
- (b) isolating any sources of energy feeding the plant;**
- (c) dissipating any sources of energy contained within the plant and preventing energy building up again during the course of the work;**
- (d) restraining the plant, materials, and any other sources of energy that can not be dissipated.**

Note: If the plant has not been shut down by the plant operators, any worker shutting it down shall liaise with the operators to ensure it can be shut down without creating an unacceptable level of risk.

Note: Isolation of energy sources should be done by physically interrupting the supply of energy. This can be done by turning off isolating switches in electrical circuits, by closing valves, by disconnecting batteries, leads, cables or hoses, by blanking off pipelines, etc. The means of isolation should be of a type that can be readily checked by a visual inspection and it should act directly on the supply line. It should not act through control circuits or emergency stop mechanisms. The point of isolation should be as close to the plant concerned as practicable.

Note: Dissipating sources of energy in the plant can be done by opening valves to drain pipelines, pressure vessels and hydraulic accumulators, by opening access hatches and inspection covers, by earthing electrostatic separators, by releasing springs, by dropping counterweights, etc.

Note: If internal sources of energy can not be dissipated, they can be restrained by securing mechanical sources of energy such as springs or gravity devices, by closing cover plates on radioactive gauges, etc. Plant that can move can be restrained by applying brakes, by inserting chocks or sprags, etc. Other types of plant they may have to be restrained include

fans or pumps that may be moved by flow through them.

C: Locking and tagging.

Each worker shall lock every device used for isolating, dissipating or restraining energy on the plant, if the device is capable of being locked.

The locking shall be done with a personal lock.

Each worker shall tag every device or other means used for isolating, dissipating or restraining energy on the plant with an isolation tag of either the single use or multiple use type. If the tag is for single use, the worker shall write on the tag in the spaces provided:

- (a) the equipment reference;**
- (b) the reason for tagging;**
- (c) the date and time of tagging;**
- (d) his or her name.**

Note: Locking provides physical security to ensure that the device used for isolating, dissipating or restraining energy is not inadvertently operated. Tags do not provide a reliable means of restraint on the device as they can be removed inadvertently by mistake or by accident. The essential purpose of a tag is to provide information, not security.

Note: If the isolation device is operated by removing a key from it and it does not have provision for individual workers to lock it, the personal isolation procedure may not be appropriate, and it may be necessary to use the group isolation procedure in Section 4.2.

Note: Devices which are not capable of being locked directly should, as far as practicable, be secured with a chain, pin or other suitable means, or by removing the handle or operating mechanism.

Note: The locks of several workers can be attached to the same device by means of hasps with holes for several locks. These are available commercially.

D: Verifying the effectiveness of energy controls.

Each worker shall either personally verify the effectiveness of the isolation, dissipation and restraint of energy sources, or if other workers are also working on the same plant, personally check that this has been done by another worker.

Note: Verification may be done by visually checking the energy controls, by reading gauges and meters, by attempting to start the plant, or by other suitable tests. However, no attempt to start the plant shall be made if work has already started on the plant.

E: Working on the plant.

If verification shows that sources of energy have been effectively isolated, dissipated and restrained, the worker may then carry out work on the plant.

If it is possible for stored energy to re-accumulate during the work on the plant, the workers shall monitor the re-accumulation and take appropriate action as necessary.

Note: While work is being carried out, the possibility that the plant might become re-energised or that energy might re-accumulate can be prevented by, for example, earthing electrical conductors, leaving drain valves open, etc.

F: Prohibition on operation of locked or tagged isolation devices.

All persons shall be prohibited from:

- (a) attempting to operate an energy isolation, dissipation or restraint device which has been locked or tagged;**
- (b) attempting to otherwise re-energise or restart the plant while persons are working on it.**

G: Removal of locks and tags.

As each worker stops work on the plant, he or she shall:

- (a) clear the plant of any tools, equipment or materials that he or she has used and that are not required by other workers still working on the plant;**
- (b) replace any guards that are not required to be left open for access by other workers still working on the plant.**

After doing this and getting clear of the plant, the worker shall then:

- (a) remove his or her isolation locks and tags;**
- (b) tear up or otherwise destroy the tags if they are of the single use type.**

Note: Destruction of single use tags after removal will prevent re-use and indicate that the tag has not been removed inadvertently or by accident.

H: Action before re-energising plant.

Before removing the last isolation locks and tags, the worker or group of workers involved shall:

- (a) check and ensure that the plant is clear of tools, equipment, materials and persons;**
- (b) check and ensure that all guards have been replaced, and the plant is fit for use.**

After the last worker removes his or her locks and tags, he or she may re-energise the plant and shall inform any plant operators or other workers affected that the plant is no longer isolated.

Note: The workers involved in checking the plant and re-energising it shall be competent to do so. If they are not, the group isolation procedure shall be used.

I: Action if plant is not fit to return to service.

If any worker stops work on the plant without finishing his or her tasks, or otherwise leaves the plant unfit for use, he or she shall then follow an

out of service procedure or otherwise ensure that the plant is kept out of operation.

J: Removal of locks and tags if worker unavailable.

If a worker has left the site without removing his or her isolation locks and tags, and it is not practicable to recall the worker to remove them, the locks and tags may be removed by a supervisor after the supervisor has checked that the person who placed the tag and lock is in fact clear of the area. The supervisor shall inform the worker concerned that his or her locks and tags have been removed as soon as practicable.

If the locks and tags are the last to be removed, the supervisor shall also follow steps H and I above.

K: Detached tags.

Any person finding a loose undestroyed isolation tag shall assume that it has been unintentionally detached from the isolation device. The person shall place a substitute tag on the isolation device, and refer the matter to the worker named on the tag or to a supervisor.

4.5 Group isolation process.

To determine if this process is suitable for the type of work to be carried out, see Section 4.1 above.

A: Selection of worker to carry out the actual isolation.

From the workers who are to work on the plant or to supervise or manage the work, one shall be selected and designated to carry out the actual isolation of the plant. The designated worker shall have adequate knowledge of the plant and the competencies required to carry out the isolation.

B: Identification of sources of energy

The worker designated to carry out the isolation shall personally identify:

- (a) all significant sources of energy coming into the plant;
- (b) all significant sources of energy contained within the plant;
- (c) any plant or contents likely to move.

C: Isolation, dissipation and restraint of energy sources.

The worker designated to carry out the isolation shall personally bring the plant to a safe state to work on. The plant shall be brought to a safe state by, as appropriate:

- (a) stopping the plant in a controlled manner;
- (b) isolating any sources of energy feeding the plant;
- (c) dissipating any sources of energy contained within the plant and preventing energy building up again during the course of the work;
- (d) restraining the plant, materials, and any other sources of energy that can not be dissipated.

Note: If the plant has not been shut down by the plant operators, the designated worker shutting it down shall liaise with the operators to ensure it can be shut down without creating an unacceptable level of risk.

D: Locking and tagging the plant.

The worker designated to carry out the isolation shall lock every device used for isolating, dissipating or restraining energy on the plant. The locking shall be done with a personal lock.

The worker designated to carry out the isolation shall tag every device or other means used for isolating, dissipating or restraining energy on the plant with a single use isolation tag. The designated worker shall write on the tag in the spaces provided:

- (a) the equipment reference;
- (b) the reason for tagging;
- (c) the date and time of tagging;
- (d) his or her name.

E: Verifying the effectiveness of energy controls.

The worker designated to carry out the isolation shall verify the

effectiveness of the isolation, dissipation and restraint of energy sources.

F: Placing keys in a lockbox and locking and tagging the lockbox.

If verification shows that sources of energy have been effectively isolated, dissipated and restrained, the worker designated to carry out the isolation shall place the keys he or she used to lock the devices for isolating, dissipating or restraining energy on the plant in a lockbox. All workers who are to work on the plant shall then lock and tag the lockbox with a personal isolation lock and an isolation tag of either the single use or multiple use type. If the tag is for single use, each worker shall write on the tag in the spaces provided:

- (a) the equipment reference;
- (b) the reason for tagging;
- (c) the date and time of tagging;
- (d) his or her name.

Before locking and tagging the lockbox, any worker may personally verify, or require the worker designated to carry out the isolation to demonstrate, that the sources of energy have been effectively isolated, dissipated and restrained.

G: Working on the plant.

After a worker has locked and tagged the lockbox, he or she may then carry out work on the plant.

If it is possible for stored energy to re-accumulate during the work on the plant, the workers shall monitor the re-accumulation and take appropriate action as necessary.

H: Prohibition on operation of locked or tagged isolation devices.

All persons shall be prohibited from:

- (a) attempting to open a locked or tagged lockbox;
- (b) attempting to operate an energy isolation, dissipation or restraint device which has been locked or tagged;
- (c) attempting to otherwise re-energise or restart the plant while persons are working on it.

I: Removal of locks and tags from the lockbox.

As each worker stops work on the plant and gets clear of the plant, the worker shall remove his or her locks and tags from the lockbox. The worker shall then tear up or otherwise destroy the tags if they are of the single use type.

J: Removal of locks and tags from lockbox if worker unavailable.

If any worker has left the site without removing his or her isolation locks and tags from the lockbox, and it is not practicable to recall the worker to remove them, the locks and tags may be removed by a supervisor after the supervisor has checked that the person who placed the tag and lock is in fact clear of the area. The supervisor shall inform the worker concerned that his or her locks and tags have been removed as soon as practicable.

K: Removal of locks and tags from the plant itself.

After all locks and tags have been removed from the lockbox, the worker designated to carry out the isolation may open the lockbox and remove the keys he or she used to lock the devices used for isolating, dissipating or restraining energy on the plant.

The worker designated to carry out the isolation shall then:

- (a) check and ensure that the plant is clear of tools, equipment, materials and persons;
- (b) check and ensure that all guards have been replaced, safety devices are operating, and the plant is fit for use.

The worker designated to carry out the isolation may then remove his or her isolation locks and tags from the plant.

He or she shall then tear up or otherwise destroy these tags.

He or she may then re-energise the plant and shall inform any plant operators or other workers affected that the plant is no longer isolated.

L: Action if plant is not fit to return to service.

If any worker stops work on the plant without finishing his or her tasks, or otherwise leaves the plant unfit for use, he or she shall then follow an out of service procedure or otherwise ensure that the plant is kept out of operation.

M: Detached tags.

Any person finding a loose undestroyed isolation tag shall assume that it has been unintentionally detached from the isolation device or lockbox. The person shall place a substitute tag on the isolation device or lockbox, and refer the matter to the worker named on the tag and to the worker designated to carry out the isolation.

4.6 Isolation locks.

Isolation locks shall be:

- (a) sufficiently durable to withstand the environment in which they are used;
- (b) standardised throughout the site;
- (c) sufficiently substantial to minimise the likelihood of accidental removal;
- (d) identifiable and assigned to an individual worker.

Keys for any lock or group of locks issued to a worker shall not be issued to any other worker.

Isolation locks shall not be used for any other purpose.

4.7 Isolation tags.

Isolation tags may be of two types:

- (a) single use tags which are used for one isolation and then destroyed;
- (b) multiple use tags which can be used repeatedly by a single worker on successive jobs.

Isolation tags shall:

- (a) conform to the requirements of *AS 1319 - 1994 Safety signs for the occupational environment*;
- (b) be sufficiently durable to withstand the environment in which they are used;
- (c) be standardised throughout the site;
- (d) be sufficiently substantial to minimise the likelihood of accidental removal;
- (e) be identifiable;
- (f) be large enough to be readily identified, at least 80mm x 50mm (see AS 1319 Section 5.2);
- (g) be provided with a substantial tie or other means of attachment.

Note: Many isolation tags in current use do not conform to the requirements in AS 1319 – 1994. See comments in notes below.

The primary purpose of an isolation tag is to prohibit operation of an energy control. Therefore to comply with AS 1319 – 1994, the top of the tag shall carry the standard regulatory - prohibition symbol of a red circle and diagonal slash on a white background (see *AS 1319 - 1994 Table 2.1*). The symbol shall be on both sides.

Under the symbol, the isolation tag shall carry the prohibition “Do not operate”. The prohibition shall be on both sides. The tag shall also carry some indication of its type such as the words “Isolation tag”.

The isolation tag may also carry other appropriate information or instructions such as:

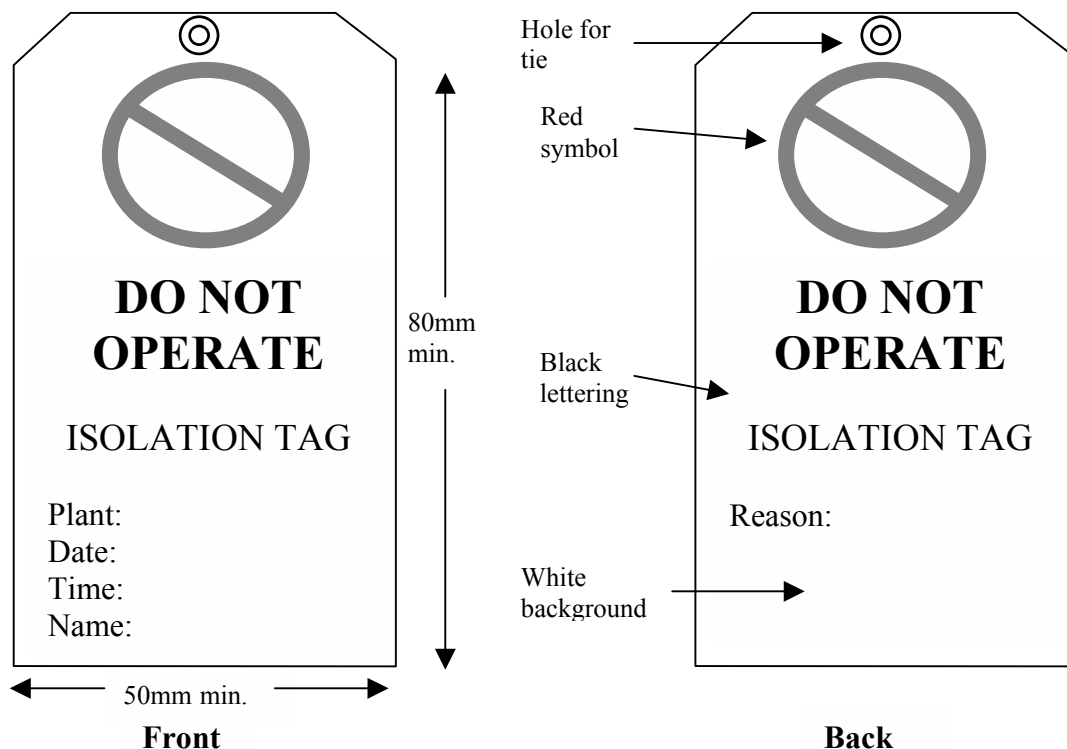
- “Person working on plant”;
- “This tag shall only be removed by the person who attached it”;
- “Personal tag”;
- “Group isolation tag”.

Single use isolation tags shall have spaces for the person using the tag to enter the plant reference, the reason for attaching the tag, the date and time of attaching the tag, and his or her name.

Multiple use isolation tags shall have the name of the worker using the tag permanently marked on the tag, and may carry other information identifying the user.

Isolation tags shall not be used for any other purpose.

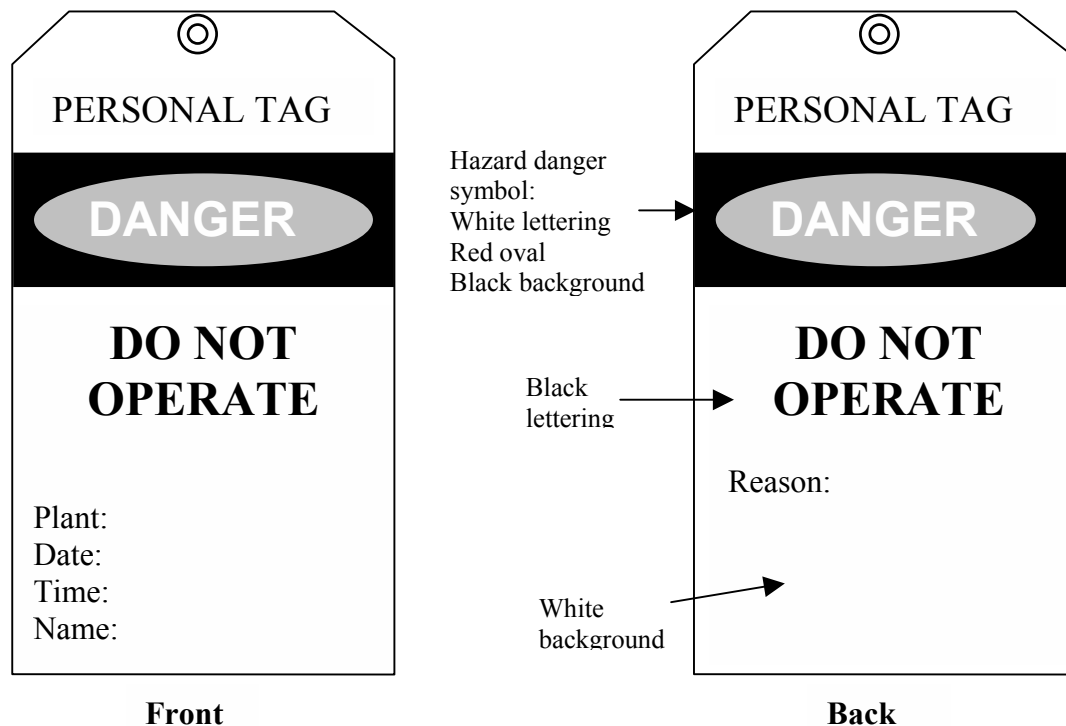
Figure 2: Example of preferred isolation tag for single use.



Note: Tags are commercially available, but the designs do not necessarily conform to AS 1319 - 1994.

Note: Many currently used isolation tags (known as "Danger" tags) carry the standard hazard - danger symbol of the word "Danger" in a red oval in a black rectangle. While this practice is common, this symbol is strictly for use on signs warning of a life-threatening hazard (see AS 1319 - 1994 Clause 2.1(b)(i)). The use of this warning symbol conflicts with the main message of the tag which is a regulatory prohibition "Do Not Operate". For this reason, the tag shown in Figure 2 is preferred to the current type of tag shown in Figure 3. For further comment on this issue, see AS 1319 - Clause 2.3.2.

Figure 3: Example of isolation tag in common use.



4.8 Lockboxes for group isolation.

Lockboxes shall be:

- (a) sufficiently durable to withstand the environment in which they are used;
- (b) standardised throughout the site;
- (c) sufficiently substantial to minimise the likelihood of unauthorised removal of keys from them;
- (d) identifiable.

Lockboxes shall not be used for any other purpose.

5 ACCOUNTABILITIES AND COMPETENCIES.

5.1 Accountabilities.

All workers shall be responsible for ensuring that plant they are working on has been isolated in accordance with the appropriate isolation procedure, unless:

- (a) the work consists of minor tool changes, adjustments or minor servicing which are routine, repetitious and integral to the use of the plant;
- (b) live work procedures are in use.

All workers on site shall be responsible for ensuring that plant that has been locked or tagged is not energised or operated.

All supervisors shall be responsible for ensuring that personal locks and tags which have been inadvertently left in place, are only removed in accordance with the personal

isolation procedure.

5.2 Competencies.

All workers shall be familiar with and understand the purpose of isolation procedures. Training in the isolation procedures used at the site shall be included in general induction training.

Any workers who personally carry out the act of isolation shall be competent to do so. The isolation of some plant may need particular competencies.

6 DEFINITIONS.

Dissipation:	Release and discharge of energy stored or contained in plant.
Hazard:	Thing or situation with potential to cause injury or illness to a person.
Isolation:	Disconnection or separation of plant or part of plant from power supplies and other sources of energy.
Isolation, group:	Isolation carried out by a worker to protect a group of workers.
Isolation, personal:	Isolation carried out by a worker to protect him or herself.
Lockbox:	Box used to hold keys of isolation locks when using a group isolation procedure.
May:	Indicates that a statement is discretionary.
Must:	Indicates that a statement is mandatory in all cases and is an obligation imposed by the Mining and Quarrying Safety and Health legislation.
Plant:	Machinery, equipment, appliance, pressure vessel, implement, tool, personal protective equipment, or a component of plant and a fitting, connection, accessory or adjunct to plant.
Procedure:	Set of directions for a job (set of related tasks) for use by the persons or groups involved. May include standard work instructions for some of the tasks forming part of the job.
Process:	Series of actions to achieve an objective.
Restraint:	Means to prevent energy contained in plant from acting, or to prevent plant from moving.

Risk:	The risk of injury or illness to a person arising out of a hazard, measured in terms of consequences and likelihood.
Risk, acceptable level of:	Risk that is within acceptable limits and as low as reasonably practicable.
Shall:	Indicates that the statement is mandatory for the purposes of this Guidance Note.
Should:	Indicates that the statement is a recommendation.
Standard work instruction:	Concise set of directions for a task, for use in the field by an individual or a small group of persons.
Worker:	Any person who carries out work at a mine.

7 REFERENCES.

AS 1319 – 1994 Safety signs for the occupational environment.

AS 4024.1 – 1996 Safeguarding of machinery Part 1 General principles.

OSHA Regulations (Standards 29 CFR) 1910.147 The control of hazardous energy (lockout / tagout).