1.0 Purpose

The purpose of the program is to provide clear and consistent procedures for the selection and use of respiratory protective equipment.

2.0 Scope

The requirements of the Respiratory Program apply to all employees of Vale Ontario Operations.

3.0 Legal and other requirements

To comply with:

- Control of Exposure to Biological or Chemical Agents (Reg. 833) Section 3, 5 & 7 [Legislation & Regulations\Control of Exposure to Biological or Chemical Agents Regulation 833.doc](http://legislation.ccohs.ca/legislation/documents/stds/csa/csbcr93e.htm)
- Canadian CSA Standard for the Selection, Use and Care of Respirators [CSA Standard Z94.4 02 Selection Use and Care of Respirators.pdf](http://legislation.ccohs.ca/legislation/documents/stds/csa/csuhr93e.htm)
• Designated Substance Regulations
  o Regulation 490.09
  o Asbestos on Construction Projects and in Buildings and Repair Operations Regulation 278-05

4.0 Roles and responsibilities

4.1 Occupational Health Department (OHD) responsibilities include:

Program administration
• Develop and administer the program;
• Remain current with respective legislation and regulation and update the program accordingly;
• Provide advice, direction and interpretation on the program;
• Provide training to the Occupational Health Contact;
• Maintain central records;
• Review and evaluate the program for compliance; and
• Report on the program compliance performance.

Program execution

Perform a hazard assessment as outline in section 5.0 of the CAN/CSA Z94.4-02 standard and ..\SPI\Active\OH-RP-SPI-01 Respiratory Hazard Assessment.pdf
• Complete the hazard evaluation tables; Refer to:
  • ..\Forms\OH-RP-FORM-04 Hazard Assessment Table - Personal Samples.doc
  • ..\Forms\OH-RP-FORM-05 Hazard Assessment Table - Area Samples.doc
• Conduct respirator selection (NIOSH decision logic or CSA Z94.4-02 Respirator Selection.); Refer to: ..\SPI\Active\OH-RP-SPI-02 Respirator Selection Flowchart.pdf
• Compile and maintain a list of respirator users for their plant/ mine; Refer to ..\Forms\Active\OH-RP-FORM-06 Respirator Users Record.doc
• Consult on the findings of the hazard evaluation with the Joint Health and Safety Committee (JHSC);
• Maintain a list of “Mandatory Respirator Use Areas and Designated Occupation/Task”;
• Post areas that require respirator equipment;
• Notify site Management and JHSC of any changes in respirator requirements;
• Establish the location and number of respirator cleaning/disinfecting stations required for employee use; Refer to: ..\SPI\Active\OH-RP-SPI-05 Respirator Cleaning Station Guideline.pdf
• Periodically audit training and fit test records;
• Have the Breathing Air Systems tested (where applicable);
• Arrange Self contained Breathing Apparatus (SCBA) and airline respirators inspection and maintenance (where applicable);
• Provide details of the type of respirator selected and the anticipated working condition to the health care professional conducting the medical assessment of
a respirator user; and
- Maintain a system to ensure that evolving plant/employee respiratory needs are tracked, so that training; fit testing and compliance are properly managed; and
- Maintain and service SCBA/SA equipment.

When notified by the supervisor that an employee believes that respiratory protection is needed during a particular activity, OHD will ensure that the potential hazard is assessed, and the results are communicated to the affected employees and supervisor. If it is determined that respiratory protection is necessary, the hazard evaluation table will be updated accordingly.

4.3 Plant / Mine responsibilities include:

- Keep an inventory of respirator make and model used in the respective site;
- Be aware of changes in work processes that may result in increased employee exposure. Such conditions may include the use of new chemicals, a change in the way chemicals are processed, handled, or manipulated, or a change in environmental controls such as local or general ventilation systems. Perform Operations/Process Evaluation. (Refer to Section 6.2)
- Notify Occupational Health of changes in processes, equipment or operating procedures that have an impact on environmental conditions and respiratory protection requirements;
- Appoint a competent individual to maintain the respirator cleaning stations;
- Ensure that the worker is aware of the hazards and is wearing the proper respirator and cartridge/filter.
- Ensure that fit testing and training are completed prior to assigning a user any task that requires the use of a respirator;
- Forward to OHD, copies of Incident Investigation reports where the use of respirators could have caused or prevented the incident;
- Ensure air purifying respirators are cleaned, sanitized, inspected, maintained, repaired, and stored in accordance with written instructions and manufacturer’s recommendations;
- Ensure the respirator is used in accordance with the instructions, the training received, and the safe operating procedures established for the workplace; e.g., manage work tasks that have been identified as requiring the use of a respirator;
- Ensure respirator users wearing a tight-fitting face piece, maintain the required clean-shaven condition, and do not have any object or material that would interfere with the seal or operation of the respirator;
- Be familiar with the Divisional Respirator Protection Program as well as the roles and responsibility of stakeholders.

Note: A person who has hair (stubble, moustache, side-burns, beard, low-hairline, bangs) which passes between the face and the sealing surface of the face piece shall not be permitted to wear such respirator.
4.4 Respirator User

All respirator users shall:

- Wear the proper respirator;
- Notify his/her Supervisor when it is believed that respirator protection is needed during a particular activity;
- Use the respirator in accordance with the instructions and training received;
- Check that the respirator is in good operating condition prior to each use;
- Fit-check the face to facepiece seal immediately after donning the respirator by using the negative and/or positive pressure sealing tests. If a satisfactory seal cannot be attained then the user shall request a fit-test as soon as possible and shall not continue performing the task that requires respirator protection;
- Return any previously issued respirator when there is no longer a need for it’s use due to re-assignments or improved control;
- Take all precautions to prevent damage to the respirator provided for use and immediately report any malfunction or damage to their immediate supervisor; and
- Be clean-shaven where the facepiece seals to the skin.

4.5 Respirator Issuers

Respirator Issuers:

- Shall check the respirator assignment record of the user on EQUAL; and
- Shall issue only the identical make, model and size respirator that is recorded for the user on EQUAL. Refer to: ..\References\OH-RP-REF-01 Respirator Equal Codes .doc

4.6 Respirator Fit-Tester

The Respirator Fit Tester shall:

- Receive additional training on subjects relevant to the proper delivery of fit testing services such as updates from the manufacturers’ of respirators and fit testing equipment, under the direction of the Program Administrator;
- Conduct fit tests in accordance with the procedures established by the Program Administrator. These are based on manufacturers’ instructions and shall be consistent with the criteria under the Canadian Standards Association - Selection, Use and Care of Respirators CAN/CSA Z94.4 standard; Refer to: ..\..\SPI\Active\OH-RP-SPI-09 Fit Test Procedure.pdf
- Not conduct a fit test when a user is not clean-shaven;
- Maintain the records of users by entering the appropriate codes on EQUAL; refer to the "Acceptable Respirators for Each Respiratory Hazard" list maintained by the Program Administrator;
- Review local problems with the OHD site EA/SEA and the Respirator User’s Supervisor; and
- Report unresolved issues to the OHD site EA/SEA.
4.7 Respirator Maintenance Personnel

The respirator maintenance personnel shall:
- Be qualified through training and experience to inspect, maintain, and repair respirators in accordance with manufacturer’s written instructions;
- Inspect, maintain, and repair respirators as required;
- Ensure that maintenance tools are kept in good repair including proper calibration; and
- Create and maintain appropriate records of maintenance and repair.

4.8 Respirator Service Technician

The Respirator Service Technician(s) shall ensure that:
- They are qualified and they maintain qualification through training and experience;
- All the service requirements of the Ontario Division’s MSA brand “breathing air” type respirators are met;
- Inspection, maintenance, testing and repairs of respirators are in accordance with manufacturer’s written instructions;
- Inspection, maintenance, testing and repairs of respirators are performed as required, at the specified intervals;
- The MSA “breathing air” products are maintained and that qualified “Issuers” receive properly serviced equipment;
- The maintenance tools are kept in good repair including proper calibration; and
- Appropriate records of maintenance, repair and equipment inventory are created and retained.

Note: All purchases of Supplied Air (SA) and Self Contained Breathing Apparatus (SCBA) and related equipment must be coordinated with the Respirator Service Technician, Nickel Refinery (682.7478) in consultation with the Safety Coordinator (Respiratory Technician Supervisor), Nickel Refinery (682.5435).

4.9 OHD – Medical Surveillance

The Occupational Medicine Department shall:
- Report to the OHD site EA/SEA, any medical limitation that a user may have when wearing a respirator; and
- Be familiar with the health effects associated with respirator hazards.

4.10 Contractors

If required to use respirator protection, the contractor will provide their employees with the knowledge and understanding of Vale’s Respirator Protection Program and practices as well as regulatory and Vale requirements. Contractors and their employees must work in compliance/conformance with those requirements. Also refer to HSE Company Guideline on Contractor HSE Requirements.  Contractor SHE Program
5.0 Respiratory Hazard Assessment

A respiratory hazard assessment for each operation, process, or work area should be conducted, including a review of the data from workroom and employee personal air monitoring.

5.1 Hazard Identification

OHD site EA/SEA shall perform a hazard assessment of the work area. This includes, identifying the respiratory hazards present and selection of the appropriate respirator where required. Refer to: ..\SPI\Active\OH-RP-SPI-01_Respiratory Hazard Assessment .pdf

The hazard assessment table summarizes the potential for personal and area exposure.

- Refer to: ..\Forms\OH-RP-FORM-04_Hazard_Assessment_Table_-_Personal_Samples .doc
- Refer to: ..\Forms\Active\OH-RP-FORM-05_Hazard_Assessment_Table_-_Area Samples .doc

Note: Updated assessments shall be completed when the nature of the hazard as determined above changes.

Note: Where the employer cannot identify or reasonably estimate the employee exposure, the employer will consider the atmospheres as IDLH.

5.2 Hazardous Operations/Processes Assessment

The following factors concerning an operation or process shall be taken into account when determining what contaminant is present in the workplace.

- Evaluate work activities, maintenance procedures and distances to safe area via floor plans;
- Identify operation process that may release air contaminants during normal operation cycles;
- Assess material used, handled and stored at each site; (e.g. process feed material, by-products, end products and chemical addition) and;
- Assess emergency repair, shutdown, plant upset and rescue conditions.

6.0 Respirator Selection

Respirator selection is based on a review of the hazard assessment, knowledge of the operations and types and limitation of the respirators. To determine the protection factor (PF) for the class of respirator; Refer to: ..\References\OH-RP-REF-02_CSA_Z94.4-02 Protection Factors .doc
Record of respirator users and fit testing dates shall be maintained using: ..\..\Forms\Active\OH-RP-FORM-06 Respirator Users Record.doc

6.1 IDLH atmospheres require highest level of protection.

For atmospheres that are immediately dangerous to life and health (IDLH), the highest level of respiratory protection and reliability is required. These atmospheres, by definition, are the most dangerous environments in which respirators are used. In these atmospheres, there is no tolerance for respirator failure. Consequently, only the following respirators must be provided and used: full-face piece pressure demand self-contained breathing apparatus (SCBA) certified for a minimum service life of thirty minutes, or a combination full-face piece pressure demand supplied-air respirator (SAR) with an auxiliary self-contained air supply. Where the employer cannot identify or reasonably estimate the employee exposure, the employer will consider the atmospheres as IDLH.

6.2 Protection factors

A respirator must not be used for protection against concentrations of an air contaminant greater than the maximum use concentration, which is the concentration determined by multiplying the exposure limit for the air contaminant by the appropriate respirator protection factor. Refer to: ..\..\References\OH-RP-REF-02 CSA Z94.4-02 Protection Factors .doc. Refer to the Code for Respiratory Equipment prescribed for each of the Designated Substances.

6.3 General limitations

6.3.1 Air-purifying respirators

- Air purifying respirators do not provide protection against oxygen deficient atmosphere;
- Air purifying respirators are not safe for IDLH atmospheres;
- Air purifying respirators must not be used if the gas or vapour has poor warning properties or the sorbent material has poor absorbing efficiency for that chemical; (i.e. mercury vapour cartridges) and;
- Organic vapour, ammonia and acid gas cartridges have use restrictions in the underground environment.

6.3.2 Supplied – air respirators

Refer to CAN/CSA Z94.4-02 Standard, Appendix G (Respirator Classification, Characteristics and Limitations for all respirators). Occupational Health and Safety Act - R.R.O. 1990, Reg. 833
6.3.3 Compressed breathing air systems

Plant/Mines that utilize compressed breathing air system shall meet as a minimum the requirements of the CAN/CSA Z180.1-00 Compressed Breathing Air and Systems. The standard includes:

- The purity of compressed breathing air supplied to the service outlet;
- The breathing air systems required to produce, store, and distribute such air;
- Requirements for the design, construction, testing, commissioning, operation and maintenance components for compressed breathing air with accepted respirators; and
- Requirement of an accredited laboratory for the analysis of breathing air quality.

6.4 Respirator selection

Respirator section shall be carried out for both non-emergency and emergency use. The respirator selected in both instances may be the same, but respirators approved for escape only shall not be used for non-emergency applications.

6.4.1 CAN/CSA Z94.4-02 Respirator Selection

For any hazard with the exception of designated substance utilize the Respirator Selection Flowchart. Refer to: ..\SPI\Active\OH-RP-SPI-02 Respirator Selection Flowchart .pdf

7.0 Respirator fit testing

Fit testing will be required for all employees who are required to wear respirators with a tight-fitting facepiece. Fit testing will be performed for employees in “designated occupations” and employees that choose to wear a respirator on a voluntarily basis, where respirators use is not mandatory:

A fit test will be required:

- After an employee has completed their medical evaluation and prior to being allowed to wear any respirator with a tight fitting facepiece in the work environment;
- Whenever a different respirator facepiece is used;
- When there are changes in the employee’s physical condition that could affect respiratory fit; (e.g., obvious change in body weight, facial scarring, etc.); and
- Every 2 years.
Refer to the Respirator Fit testing Protocol \SPI\Active\OH-RP-SPI-09 Fit Test Procedure.pdf

As best practice Inco recommends the use of Quantitative fit test however the qualitative fit testing will only be used for back up. The following two general fit test methods are acceptable:

- Qualitative fit testing (QLFT); and
- Quantitative fit testing (QNFT).

### 7.1 Qualitative Fit Testing (QLFT)

A qualitative fit test relies on a person’s response due to taste, smell, or irritation, to a test agent. Acceptable qualitative fit test methods are listed below.

#### Acceptable QLFT Methods

<table>
<thead>
<tr>
<th>Test agent</th>
<th>Response based on</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Isoamyl acetate (banana oil)</td>
<td>Smell</td>
</tr>
<tr>
<td>2. Saccharin solution aerosol</td>
<td>Taste</td>
</tr>
<tr>
<td>3. Bitter aerosol</td>
<td>Taste</td>
</tr>
</tbody>
</table>

Refer to CAN/CSA Z94.4-02 Standard, Appendix B (Qualitative Respirator Fit Testing) for the QLFT protocols. \Legislation & Regulations\CSA Standard Z94_4_02 Selection Use and Care of Respirators.pdf

Each QLFT on a respirator with a facepiece that requires a tight face-to-facepiece seal is conducted in the negative-pressure mode.

### 7.2 Quantitative Fit Testing (QNFT)

Acceptable quantitative fit test methods include those prescribed in Appendix C of CAN/CSA Z94.4-02.

A quantitative fit test measures the concentration of a test agent inside the respirator facepiece. Unlike qualitative fit tests, quantitative tests do not depend on a person's response to a test agent. Quantitative fit tests are conducted using electronic equipment (such as a condensation nuclei counter) capable of counting airborne particles. Refer to the equipment’s manufacturer’s instructions. Each QNFT is conducted in the negative-pressure mode.

### 8.0 Respirator use, inspection and monitoring

### 8.1 Respirator use

Respirators require effective seals in order to function properly; therefore, any worker who cannot achieve and maintain an effective seal should not work in an area where respiratory protection is required.
8.2 User requirements

- Complete the Respirator Fit Program Questionnaire; Refer to: Forms\OH-RP-FORM-01 Respirator Fit Program Questionnaire.doc
- Anyone required to wear a respirator shall be clean-shaven where the facepiece seals to the skin;
- Wearing of contact lenses with a respirator will be determined on an individual basis by the Occupational Health Nurse or Medical Director;
- Safety glasses, including prescription safety glasses, should not interfere with the sealing capability of the facepiece; and
- No other material such as petroleum jelly should be used to seal the facepiece to the skin.

8.3 Respirator inspections and monitoring

Note: under no circumstances should a respirator be removed in the contaminated work area.

8.3.1 Inspection and monitoring requirements:

All respirator wearers should inspect their respirators prior to use.

Respirator usage must be monitored on a routine basis to ensure that the correct respirator is being used, that they are worn properly, that they are in good working condition.

Workplace environment monitoring shall be conducted according to the Occupational Exposure Monitoring Program (OEMP) for each site and at regular intervals where Respirator Protection has been deemed necessary to ensure that the correct PPE is provided.

Immediately after donning a respirator, the wearer must perform the positive and negative pressure fit check. Refer to: SPI\Active\OH-RP-SPI-03 Positive and Negative Pressure User Seal Check.pdf

8.4 Respirator face-to-facepiece seal

- Persons using positive-pressure or negative-pressure respirators shall be clean-shaven where the facepiece seals to the skin.
- Respirators requiring a tight fit in order to perform effectively shall not be worn when an effective seal to the face of the person cannot be achieved and maintained.
- Side arms on eyeglasses or any other materials such as hair, cloth, tissue, straps, jewellery, etc shall not pass between the face and the sealing surface of the facepiece or interfere with the seal of the tight-fitting facepiece to the face or interfere with the operation of the respirator.
The permitted use of contact lenses is done in accordance with SPI-SAF-01 – 4.3. See the references listed in Appendix E.

Other personal protective devices or equipment shall not interfere with the seal of the facepiece to the face of the user.

Persons who cannot achieve and maintain an effective closure of the nose or a seal around a respirator mouthpiece shall not be permitted to use a mouthpiece and nose-clamp type of respirator.

Self-contained breathing apparatus shall not be modified to accommodate a resuscitator nor shall it be used as such.

Used respirators shall be reconditioned to accepted manufacturer’s standards and used SCBA shall be reconditioned by the manufacturer or their authorized service agents prior to use after transferring ownership.

9.0 Cleaning, inspection, maintenance and storage

9.1 Respirator cleaning and inspection

Personally assigned respirator must be cleaned and sanitized regularly.

The employee using it must inspect routinely before and after each use. Some specialized respirators such as airline, SCBA or PAPR respirators require additional inspection, maintenance and cleaning procedures that are specified by the manufacturer.

The employees to whom they are assigned for emergency use must inspect respirators for each use, or at least once each month. Inspections of emergency respirators should be done according to manufacturers’ instructions.

Respirators issued for exclusive use must be cleaned and disinfected after each workshift, or as necessary to ensure protection for the wearer. Respirators used by more than one person and emergency respirators should be cleaned and disinfected after each use.

9.2 Respirator maintenance

Do not attempt to replace components or make adjustments or make repairs beyond the manufacturer’s recommendations. Self-contained breathing apparatus and cylinder or airline respirators must be returned to a competent repair service. Refer to: Inspection and Maintenance of air-purifying respirators.pdf
9.3 Respirator storage

After inspection, cleaning and necessary repair, store respirators to protect them against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Refer to: ..\..\SPI\Active\OH-RP-SPI-07 Storage of Respirators.pdf

10.0 Medical evaluation

Respirator users will fill out the medical evaluation questionnaire before being fit tested. If a worker is required to use a respirator and there is doubt about the worker's ability to use a respirator for medical reasons, a physician must examine the worker, and the examining physician must be provided with sufficient information to allow the physician to advise the employer of the ability of the worker to wear a respirator.

OHD Medical Surveillance then contact the OHD site EA/SEA for additional information that will be need for employee evaluation.

A written opinion from the OHD Medical Surveillance will indicate whether the employee meets the medical requirements or meets the medical requirements with limitation or does not meet medical requirements to use the selected respirator. Refer to: ..\..\SPI\Active\OH-RP-SPI-08 Case managing employees for respirator fit testing.pdf

This information is controlled and retained by the OHD Medical Surveillance via a fit test questionnaire. ..\..\Forms\Active\OH-RP-FORM-01 Respirator Fit Program Questionnaire.doc

11.0 Training

Every person using, supervising a user, issuing, maintaining and fit testing a respirator shall be provided refresher training at least every 2 years. In alternate years between refresher training sessions, a review shall be performed to confirm that every respirator user remains qualified. Where the review reveals that a user requires refresher training, this shall be provided. The review may be replaced by refresher training.

11.1 Occupational Health

All Occupational Health staff shall remain current in the provisions of the Respiratory Protection Program. This training must be recorded on EQUAL as SRP1003 “RESP PROG TRAIN THE TRAINER”. The course instructor must ensure that participants are familiar with the following references:
- CAN/CSA Z94.4-02 Standard; Selection Use and Care of Respirators;
- CAN/CSA Z180.1-00 Standard; Compressed Breathing Air and Systems;
- Applicable sections of Ontario Regulations; (designated substance respirator codes);
- Manufacturer’s recommendations for use, maintenance, and care of equipment; and
11.2 Site Management / Supervisors

Supervisors shall remain current in: (minimum of every 2 years)
- SRP1001 “RP USER AND SUPERVISOR TRAINING, or
- SRHP 2000 “RESPIRATORY/HEARING CBT”;
In addition, Supervisors of the following equipment must be current on:
- SRP1010 “MSA SCBA OPERATION” prerequisite MO067;
- SRP1011 “MSA AIRLINE MASK OPERATION” prerequisite MO067S01;
- SRP1014 “SURVIVAIR 5 MINUTE ESCAPE” prerequisite MO067S01.

The prerequisites MO067 “PRESSURE DEMAND BREATHING APP” and MO067S01 “AIR BREATHING APPARATUS” consist of a review of the manual and the successful completion of a written exam.
11.3 Respirator Users

Respirator users shall remain current in: (minimum of every 2 years)
- SRP1001 “RP USER AND SUPERVISOR TRAINING”; or
- SRHP 2000 “RESPIRATORY/HEARING CBT”;

In addition, users of the following equipment must be current on:
- RP1010 “MSA SCBA OPERATION” prerequisite MO067;
- SRP1011 “MSA AIRLINE MASK OPERATION” prerequisite MO067S01;
- SRP1014 “SURVIVAIR 5 MINUTE ESCAPE” prerequisite MO067S01;

The prerequisites MO067 “PRESSURE DEMAND BREATHING APP” and MO067S01 “AIR BREATHING APPARATUS” consist of a review of the manual and the successful completion of a written exam.

11.4 Respirator Trainers

- Each trainer who provides instruction on the use of respirators must be current on the provisions of the Respirator Program as described in section 6.4 above; and
- Each trainer must also be current on the following courses as appropriate.

<table>
<thead>
<tr>
<th>The trainer must be current on...</th>
<th>... in order to qualify to instruct on...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRP1004 “MSA SCBA LEVEL I”</td>
<td>SRP1010 &quot;MSA SCBA OPERATION” or SRP1011 &quot;MSA AIRLINE MASK OPERATION&quot;</td>
</tr>
<tr>
<td>SRP1006 “SURVIVAIR TRAIN THE TRAINER”</td>
<td>SRP1014 &quot;SURVIVAIR 5 MINUTE ESCAPE&quot;</td>
</tr>
</tbody>
</table>

11.5 Respirator Issuers

The issuer shall remain current in: (minimum of every 2 years)
- SRP1002 “RESPIRATOR ISSUANCE”.

11.6 Respirator Fit Testers

The Respirator Fit Tester Trainer shall remain current in: (minimum of every 2 years)
- SRP1003 "RESP PROG TRAIN THE TRAINER”; and
- SRP 1007 “RESPIRATOR FIT TESTER”;

The Respirator Fit Tester shall receive additional training on subjects relevant to the proper delivery of fit testing services such as updates from the manufacturers’ of respirators and fit testing equipment, under the direction of the OHD site EA/SEA.
11.7 Respirator Maintenance Personnel

The Respirator Maintenance Technician shall be trained in: (minimum of every 3 years)
• Equipment specific training

The Respirator Service Technician shall be trained in: (minimum of every 3 years)
• SRP1009 MSA-EQUIPMENT REPAIR CERTIFICATION
• SPR 1004 MSA SCBA LEVEL 1 MAINTENANCE

11.8 Training competencies

Refer to the CAN/CSA Z94.4-02, Table 3, Training matrix. The training matrix makes reference to the training competencies for each role and responsibility. The training packages should cover the material listed in the Training competencies. Refer to CAN/CSA Z94.4-02 Standard Section 8.

11.9 Record Keeping

Training records are recorded in the EQUAL system.

12.0 Document Control

12.1 Hazard assessment

OHD site EA/SEA will retain the hazard assessment and submit a copy to the Program Administrator. This assessment will be reviewed yearly and updated when referencing the monitoring data. Refer to: ..\..\SPI\Active\OH-RP-SPI-01 Respiratory Hazard Assessment.pdf

12.2 Respirator Selection

The Respirator Selection record will be kept with the OHD site EA/SEA. This record will be reviewed yearly and updated as needed when referenced to the monitoring data. Refer to section 3 of: ..\..\Forms\Active\OH-RP-FORM-06 Respirator Users Record.doc

12.3 Fit test records

OHD Medical Surveillance and the Protection Services Department shall retain fit test records and record into equal until the next fit test. The record includes:
• Name and serial #
• The type of fit test performed.
• Make, model and size of the respirator fitted
• Date of the fit test
• Result of the fit test
12.4 Training Records

Training record is to be recorded in the EQUAL program by Protection Services Department.

12.5 Respirator fit program questionnaire

The Respiratory fit program questionnaire shall be kept in first aid with the fit test record. The evaluation record shall be kept with the OHD Medical Surveillance.

12.6 Program evaluation

12.6.1 Respirator protection program checklist

The Program Administrator will retain the Respirator Protection Program Checklist. A copy of the audit, recommended corrective action will be forwarded to the plant/mine.

12.6.2 Respirator protection program checklist (internal audit)

Occupational Health will keep copies of the audit findings and corrective action. A copy of the audit will be submitted to the Program Administrator bi-annually.

13.0 Program evaluation

The OHD site EA/SEA will ensure that the respiratory protection program is reviewed on an annual basis to ensure that the program is being managed effectively and ultimately that respirator users are being adequately protected.

Key elements of program evaluation may include:

a) A review of program elements against regulatory requirements;
b) Identification of management processes, which include the clear definition of roles and responsibilities and adequate resources;
c) A review of documented program procedures;
d) Examination of records to verify that documented procedures are being followed;
e) Confirmation that workplace practices comply with program requirements;
f) Documentation of performance problems and subsequent resolution or corrective action plans’
g) Stakeholder input to verify worker acceptance (comfort, ease of breathing, fatigue, vision, mobility, job interference, utility);
h) Proper selection, use and maintenance or respirators;
i) Effective training of all stakeholders;
j) Proper inspection of respirators; and
k) Proper storage and maintenance of respirators.

The OHD site EA/SEA shall review summary information derived from the biological monitoring performed, to evaluate the effectiveness of the respiratory protection program. This evaluation will be done on an annual basis.

13.1 Respirator protection program checklist

The OHD site EA/SEA shall perform a program audit at the site level. The purpose of the checklist is to check each element of the program and ensure that corrective action take place. Following the audit, the facility will be required to correct the action recommended in the audit and implement the action by a target date. Refer to: ..\..\..\Forms\Active\OH-RP-FORM-02 Respirator Protection Program Checklist.doc

13.2 Respirator protection program checklist – internal audit

The internal audit checklist is to be utilized by the OHD site EA/SEA on an annual basis. The purpose of this audit is to check the elements of the program applicable to the plant/mine. The gaps within the audit will be rectified at the plant/mine level and corrective actions will be implement to ensure conformances to the program. Refer to: ..\..\..\Forms\Active\OH-RP-FORM-03 Respirator Protection Program Internal Audit Checklist.doc

14.0 Communication

Criteria and methods for advising and updating affected employees and others on changes to activities, respiratory protective equipment, results of testing, etc… with respiratory implications in the respiratory protection program, shall be carried out in accordance with site specific communication policies and protocols.

15.0 Additional References

..\Resources\OH-RP-RESOURCE-03 Respirators in the Refinery Environment.doc
..\Resources\OH-RP-RESOURCE-04 Respirators in the Smelter Environment.doc
..\Resources\OH-RP-RESOURCE-05 Respirators in the Mill Environment.doc
..\Resources\OH-RP-RESOURCE-06 Respirators in the Mine Environment.doc
Appendix 1 Definitions

Accepted respirator — a respirator tested and certified by procedures established by testing and certification agencies recognized by the authority having jurisdiction.

Aerosol — a particulate suspended in a gaseous medium.

Air-purifying respirator — a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor (APF) — the anticipated level of respiratory protection that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users.

Atmosphere-supplying respirator — a respirator that supplies the respirator user with breathing air/gas from a source independent of the ambient atmosphere.

Authority having jurisdiction — an agency established by a provincial, federal, or territorial government that has the responsibility for occupational health and safety legislation.

Biological monitoring — analysis of exhaled air, a biological fluid (e.g., urine, blood, perspiration), or a body component (e.g., hair, nails) to assess the extent to which an individual has been exposed.

Breathing gas — includes oxygen, air, or other respirable gas as defined in the relevant Standards.

Clean Shaven — means no hair, stubble, moustache, side-burns, beard, low-hairlines, bangs that pass between the face and the sealing surface of the face piece.

Compressed breathing air — air meeting the purity requirements of CSA Standard Z180.1.

Confined space — as defined by the authority having jurisdiction. All confined spaces are considered Immediately Dangerous to Life and Health (IDLH) unless proven otherwise.

Demand — a respirator where the pressure in the facepiece is negative with respect to the ambient pressure during inhalation and positive during exhalation.

Designated occupation/task — are occupations or tasks that have been identified by the Designated Substance Program and/or Occupational Exposure Monitoring Program (OEMP) as occupations or tasks may which result in an overexposure, or potential exposure, to airborne contaminants in the workplace.

End-of-service-life indicator (ESLI) — a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Explosive atmosphere — an atmosphere where the concentration of contaminants is between the lower and upper explosive limits, or as defined by the authority having jurisdiction.

Fit factor — a quantitative measure of the fit of a particular respirator to a particular individual.
Fit test — the use of a qualitative or a quantitative method to evaluate the fit of a specific make, model, and size of respirator on an individual.

**Fume** — solid particles generated by condensation from the gaseous state, generally after volatilization from melted substances (e.g., welding) and often accompanied by a chemical reaction, such as oxidation. See **Particulate**.

**Gas** — a substance that is in the gaseous state at ambient temperature and pressure.

**Hazard ratio (HR)** — the estimated/measured airborne concentration of a substance divided by the occupational exposure limit; this ratio is calculated for each gas, vapour, and/or particulate component that poses a respiratory hazard.

**Hazardous atmosphere** — any atmosphere that is oxygen-deficient, exceeds occupational exposure limits, presents a fire/explosion hazard, and/or contains an airborne toxic or disease-producing contaminant in concentrations deemed to be hazardous.

**Health care professional** — an individual who is licensed by a provincial licensing authority or equivalent to practice medicine or nursing and who possesses relevant experience and knowledge in the field of occupational health and safety.

**Helmet/Hood** — that portion of a respirator, which completely covers the head and neck, may cover portions of the shoulders, and may offer head and/or eye protection.

**High-efficiency particulate filter (He)** — a filter that has been tested to ensure an efficiency equal to or exceeding 99.97% for removal of particles having a mean aerodynamic diameter of 0.3 µm from the air.

**Highest hazard ratio (HHR)** — the highest calculated hazard ratio (HR) for any gas, vapour, and/or particulate component that poses a respiratory hazard.

**Immediately dangerous to life or health atmosphere (IDLH)** — an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual’s ability to escape.

**Intrinsically safe respirator** — an accepted respirator that has been certified as not being a source of ignition.

**Loose-fitting facepiece/visor (LFFV)** — that portion of a respirator that forms a partial seal with the face, does not cover the neck and shoulders, and may or may not offer head and/or eye protection.

**Mist** — liquid particles in a gaseous medium.

**Mouthpiece** — that portion of a respirator that is held and sealed in the user’s mouth and is designed to be used in conjunction with a nose clamp.

**Occupational exposure limit (OEL)** — a maximum concentration of airborne contaminants deemed to be acceptable, as defined by the authority having jurisdiction. In the absence of a
regulated occupational exposure limit, a qualified person with the approval of the authority having jurisdiction, may establish a limit for the workplace.

**OEL** – Occupational Exposure Limit.

**Oil** — any of numerous mineral, vegetable, and synthetic substances and animal and vegetable fats that are generally slippery, combustible, viscous, liquid or liquefiable at room temperature, and soluble in various organic solvents such as ether but not in water.

**Oxygen deficiency** — a condition based on an oxygen concentration or partial pressure below which a person may be adversely affected. Oxygen deficiency is an atmosphere that contains less than 19.5 % Oxygen.

**Particulate** — airborne contaminants other than gas and vapour, but including dusts, fumes, mists, fibers, fog, pollen, smoke, and spores.

**Powered air purifying respirator** — a device equipped with facepiece, breathing tube and blower that draws ambient air through filters and/or cartridges and delivers it to the user’s breathing zone.

**Pressure-demand respirator** — a respirator where the pressure in the facepiece or hood remains positive with respect to the ambient pressure during both inhalation and exhalation.

**Program administrator** — the individual designated to ensure the development, implementation, and maintenance of the respiratory protection program.

**Qualified person** — an individual who possesses the knowledge, experience, and training in order to fulfill the competencies of the roles defined in this Standard.

**Qualitative fit test (QLFT)** — a pass/fail test method that relies on the subject’s sensory response to detect a challenge agent in order to assess the adequacy of respirator fit.

**Quantitative fit test (QNFT)** — a test method that uses an instrument to assess the amount of leakage into the respirator in order to assess the adequacy of respirator fit.

**Respirator** — a device to protect the user from inhaling a hazardous atmosphere.

**Sanitization** — the use of an accepted disinfectant product to clean the surfaces of inanimate objects in order to mitigate or prevent the transmission of disease to humans.

**Self-contained breathing apparatus (SCBA)** — an accepted respirator that has a portable supply of breathing gas and is independent of the ambient atmosphere; this includes both open-circuit and closed-circuit respirators.

**Service life** — the period of time during which a respirator provides adequate protection to the user.

**Shall** — is used to express a requirement and an obligation.

**Should** — is used to express a recommendation.
Smoke — aerosols, gases, and vapours resulting from incomplete combustion.

Sorbent — a material contained in a respirator that removes toxic gases and vapours from the inhaled air.

Supervisor — the employer or a team leader or a person assigned by the employer having authority for the respirator user and control over the workplace.

Supplied-air respirator — an accepted respirator and air supply hose with a hood/helmet, a tight-fitting facepiece, or a loose-fitting facepiece/visor that is supplied with compressed breathing air from a compressed breathing air system.

Tight-fitting facepiece — a respirator inlet covering that forms a complete seal with the face. This includes a quarter-facepiece that covers the user’s nose and mouth above the chin; a half-facepiece that covers the user’s nose and mouth under the chin; and a full-facepiece that covers the user’s nose, eyes, and mouth under the chin.

Type N particulate filter — NIOSH classification for particulate filter effective against particulate aerosols free of oil; time-use restrictions may apply.

Type P particulate filter — NIOSH classification for particulate filter effective against all particulate aerosols.

Type R particulate filter — NIOSH classification for particulate filter effective against all particulate aerosols; time-use restrictions may apply.

User seal check — an action conducted by the respirator user to determine if the respirator is properly seated to the face.

Vapour — the gaseous state of a substance that is solid or liquid at ambient temperature and pressure.
## Appendix 2  Amendment List

<table>
<thead>
<tr>
<th>Revision No.</th>
<th>Revision Date</th>
<th>Changes</th>
<th>Approval</th>
</tr>
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</table>
| 1            | November 2008  | Change Inco to Vale Inco  
Change to Vale Inco HSEMS format  
Pg: 1 - Purpose changed  
Pg: 1 - Scope changed  
Pg: 2 - Legal Responsibilities changed to include web links  
Pg: 2 – Roles and Responsibilities changed to reflect new Occupational Health structure | Nancy Keller           |
| 2            | March 2009     | Technical review and update                                                                                                                                                                            | Nancy Keller           |
| 3            | September 2010 | Vale Brand                                                                                                                                  | Nancy Carrier-Adams    |