Health monitoring

Guide for fluorides





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Introduction

This guide is intended to be read by a registered medical practitioner with experience in health monitoring who is engaged by person conducting a business or undertaking (PCBU) to carry out or supervise health monitoring. It provides practical guidance to registered medical practitioners about requirements under the work health and safety (WHS) laws for health monitoring.

This guide applies to all workplaces covered by the WHS Regulations where health monitoring is required.

**How to use this guide**

This guide includes references to the legal requirements under the WHS Act and WHS Regulations. These are included for convenience only and should not be relied on in place of the full text of the WHS Act or WHS Regulations.

The words ‘must’, ‘requires’ or ‘mandatory’ indicate a legal requirement exists that must be complied with. The word ‘should’ is used in this guide to indicate a recommended course of action, while ‘may’ is used to indicate an optional course of action.

This guide provides information for those registered medical practitioners engaged by a PCBU to carry out or supervise health monitoring for workers. This guidance should be read in conjunction with the following:

* *Health monitoring guide for registered medical practitioners*
* *Health monitoring guides for hazardous chemicals*
* *Health monitoring guide for workers*
* *Health monitoring guide for persons conducting business or undertakings (PCBUs).*

**Health monitoring under the WHS Regulations**

In certain circumstances, the model WHS Regulations place duties on a PCBU to provide health monitoring to workers. These requirements arise if the worker is carrying out work with hazardous chemicals including lead and asbestos. In addition, the work being carried out must be the kind of work specified in the WHS Regulations. A PCBU has the duty to determine if health monitoring is required.

The WHS Regulations prescribe that health monitoring is carried out by or supervised by a registered medical practitioner with experience in health monitoring.

# Fluorides

Fluorine (as F2) (CAS 7782-41-4) is a pale yellow gas at normal temperature with an odour similar to ozone. It is extremely reactive; organic and hydrogen-containing compounds may burn or explode when exposed to it. Due to its reactivity, fluorine gas rarely occurs in nature, with fluoride ion more commonly found.

Metallic fluorides are solids with variable solubilities in water:

* the salts of monovalent metals are fairly soluble
* the salts of divalent metals are sparingly soluble, and
* hydrogen fluoride (HF) is a reactive gas that readily dissolves in water, reacts with glass and is corrosive.

**Work activities that may represent a high risk exposure**

Hydrogen fluoride (HF) is used predominantly for the manufacture of fluorocarbon chemicals including fluoropolymers and refrigerants such as hydrocarbons.

Aluminium fluoride (AlF3) is used for aluminium production, as catalysts for petroleum alkylation and for production of chemicals, including herbicides and uranium fluorides used in the nuclear industry.

The major occupational uses of fluorides are:

* insecticides
* floor polishes
* petroleum
* aluminium
* glass and non-metal product etching
* timber preservation
* dietary supplement and toothpaste manufacture
* water treatment
* semiconductor industry
* manufacture of chemicals, solvents and plastics for laundries
* corrosion inhibitor
* electroplating agents
* flux agents for casting or joining
* fixing agents
* welding and soldering agents
* drilling
* metal extraction and refining, and
* metal surface treatment.

**Sources of non-occupational exposure**

Fluoride is found in most foods including tea and drinking water, as well as dental hygiene products.

Exposure to fluorides can occur through:

* diet – water, seafood, fish, mouthwash, dental products
* cleaning/washing agents, and
* etching creams or solutions.

## Health monitoring for fluorides under the Work Health and Safety (WHS) Regulations

Collection of demographic, medical and occupational history

Physical examination with emphasis on the respiratory system

Pre and post shift urinary fluoride level

Health monitoring under the WHS Regulations is applicable to metallic fluorides, hydrogen fluoride and fluorine.

Once absorbed, fluorine is converted to fluoride. The toxic effects associated with ‘fluorine’ is mainly attributed to the fluoride ion. Hence, fluorine and fluorides are considered to have a similar hazard and toxicity profile.

In this guide, ‘fluoride’ is used to refer to metallic fluorides, hydrogen fluoride and fluorine. Health monitoring for non-metal fluorides and organic fluorine containing compounds is not covered by this guide.

Health monitoring before starting work in a fluoride process

Health monitoring for fluoride may be required before the worker starts work so that changes to the worker’s health can be detected.

Initial discussions about a health monitoring program should include:

* possible health effects from exposure to fluoride
* how to recognise and report symptoms, and
* what is involved in the health monitoring program, for example the frequency of testing and the tests that may be needed.

Consideration should be given to X-rays that should pay particular attention to the pelvis and vertebrae for evidence of increased bone density due to fluorosis.

Fluorides are respiratory irritants and it is important to investigate respiratory symptoms. However, spirometry may not be required at this stage.

During exposure to a fluoride process

## Monitoring exposure to fluorides

Where workers are exposed, suspected of being exposed or are concerned about exposure to fluorides, the person conducting the business or undertaking (PCBU) has a duty to arrange a health monitoring appointment with a registered medical practitioner. For example, an appointment should be arranged following spills or loss of containment of fluorides resulting in excessive exposure to workers or when workers develop symptoms of fluoride exposure.

In the workplace, the respiratory route is the primary route of exposure. The extent of pulmonary absorption is dependent on the solubility of the compound and particle size. Soluble fluorides are readily absorbed following inhalation with greater than 90 per cent pulmonary absorption. Insoluble fluorides are absorbed to a lesser extent.

Absorption by the oral route shows a similar pattern, with the extent of absorption dependent on the solubility of the compound.

Following absorption by the inhalational route, urinary fluoride levels increase within two hours of exposure and remain elevated for 2–4 hours after exposure has ceased. Excretion of fluoride from the body is predominantly via the urine (approximately 40 per cent of the absorbed dose). The remainder is deposited in the mineral matrix of bone. The half-life of fluoride in skeletal tissues is long (8–20 years) compared with the half-life in soft tissue and plasma (2–9 hours).

The following test should be used to test the worker’s fluoride exposure levels:

* urinary fluoride levels.

Due to dietary sources of fluoride and the long term retention of fluoride in skeletal tissues, background levels of fluoride in urine can be significant, with considerable inter-individual variability, particularly in those subjects who have worked previously with fluoride compounds. For these reasons, it is recommended that pre-shift baseline urinary fluoride levels be assessed. Pre-shift samples should be collected after at least a 48 hour break from exposure, generally after a weekend break. The pre-shift urinary fluoride levels provide an indicator of skeletal burden, with elevated levels indicating that continued exposure may pose a health risk for the worker.

Post-shift urinary fluoride levels should also be monitored. The increase in urinary fluoride levels from pre-shift to post-shift levels, provides an indication of exposure during the day. Post-shift samples should be collected as soon as possible after exposure. Care should be taken during sample collection to avoid contamination from air and exposed skin and clothing.

Where urinalysis is performed, the following values should be used as a guide for assessing exposure to fluorides:

Biological exposure standard for fluorides[[1]](#footnote-1)

*Pre-shift urinary fluoride:*

2 mg/L

*Post-shift urinary fluoride:*

3 mg/L

**These values are expected to be protective for skeletal fluorosis in workers exposed to fluoride. Background urinary fluoride levels in non-occupationally exposed individuals are generally less than 1 mg/L.**

Where biological monitoring indicates that a worker has been occupationally exposed to a significant level of fluorides, a medical examination should be performed. Skeletal X-ray examinations, particularly of the pelvis and vertebrae, should be considered to examine for early signs of fluorosis.

Urine fluoride levels will be affected by:

* fluoride in consumed food and drinking water
* fluoride released during the metabolism of some pharmaceuticals or other industrial chemicals, and
* handling of some household products that may have fluoride-containing chemicals.

### Other health monitoring methods

As plasma fluoride levels generally correlate with urinary fluoride levels, this method has been considered as an alternative biological exposure monitoring method. However, it cannot be recommended at this stage:

* the database is insufficient
* there are technical issues with the analytical technique, and
* blood levels of fluoride are generally low (1–10 per cent of urine levels) with the potential for contamination to have a greater impact on the results.

The urinalysis method is preferred.

### Workplace exposure standard

The workplace exposure standard for fluorides (as F) is:

* eight hour time weighted average (TWA) of 2.5 mg/m3.

A physical examination and urinary testing may be required if the results of air monitoring indicate frequent or potentially high exposure (half of the TWA or above).

### Removal from work

Where a medical examination indicates the worker is displaying symptoms of exposure to fluorides or where results of biological monitoring indicate exposure that may cause adverse health effects, the registered medical practitioner should consider recommending the worker be removed from fluoride-related work.

When removal from fluoride-related work is indicated the registered medical practitioner must provide the PCBU with the following recommendations:

* the worker should be removed from work with fluorides, and
* the PCBU should review control measures and carry out recommended remedial action.

The worker must be informed of the results of health monitoring.

### Return to work

Should a worker be removed from fluoride-related work, they must not return until the registered medical practitioner has:

* assessed them as medically fit, and
* made a recommendation to the PCBU that the worker can return to remediated fluoride-related work.

This assessment should take into consideration the clinical condition of the worker, the worker’s urinary fluoride levels and remediation of the circumstances that led to the symptoms if possible.

At termination of work in a fluoride process

## Final medical examination

A urine sample should be collected on the last day of the worker’s final shift, and a final medical examination should be carried out at the same time or as soon as possible thereafter. Depending on the results of these, an appointment with the registered medical practitioner may be required and may include further investigations (including X-rays) as appropriate.

Workers with health conditions or continuing symptoms due to exposure to fluorides should be advised to seek continuing medical examinations as organised by the registered medical practitioner supervising the health monitoring program.

A health monitoring report from the registered medical practitioner should be provided to the PCBU as soon as practicable after the completion of the monitoring program, and at regular intervals for longer term or ongoing health monitoring processes. The report must include:

* the name and date of birth of the worker
* the name and registration number of the registered medical practitioner
* the name and address of the PCBU who commissioned the health monitoring
* the date of the health monitoring
* any test results that indicate whether or not the worker has been exposed to a hazardous chemical
* any advice that test results indicate that the worker may have contracted an injury, illness or disease as a result of carrying out the work that triggered the requirement for health monitoring
* any recommendation that the PCBU take remedial measures, including whether the worker can continue to carry out the type of work that triggered the requirement for health monitoring, and
* whether medical counselling is required for the worker in relation to the work that triggered the requirement for health monitoring.

Potential health effects following exposure to fluorides

## Route of occupational exposure

The primary route of fluoride exposure is via inhalation.

Accidental ingestion may be possible, especially when eating or smoking with contaminated hands.

## Target organ/effect

The target organs and potential effects of fluoride exposure include:

Table 1 Target organs and potential effects of fluoride exposure

| Target organ | Effect |
| --- | --- |
| Skin | IrritationBurns |
| Respiratory system | Irritation |
| Eyes | Irritation |
| Skeletal system, including teeth | Fluorosis |
| Cardiovascular system | Arrhythmias secondary to hypocalcaemia and hyperkalaemia |
| Central nervous system | HeadachesTremors |

## Acute effects

**Respiratory system**

Inhalation of fluoride may lead to irritation of the respiratory tract, with coughing and choking, and may cause respiratory depression.

Symptoms reported in cases of exposure include:

* bronchial ulceration
* pulmonary haemorrhage oedema
* discomfort of the nasal passages
* redness
* itching
* nose bleeds
* ‘sinus trouble’
* burning, and
* irritation.

**Skin**

The liquid and vapour of fluorides may cause severe irritation and may result in severe burns, depending on the compound.

Skin irritation may manifest as itching, burning or rash.

**Eye**

The liquid and vapour of fluorides may cause prolonged or permanent visual defects, eye irritation including conjunctival irritation and lacrimation.

**Cardiovascular system**

Exposure to fluorides may inhibit oxygen binding and blood clotting and diminish erythrocyte glycolysis. It also induces efflux of potassium from red blood cells, resulting in hyperkalaemia and hypocalcaemia that may cause cardiac arrhythmias and arrest.

**Neurological system**

Acute over-exposure can cause:

* headaches
* tremors
* muscular spasm
* tetany and weakness
* hyper-reactive reflexes, and
* seizures.

## Chronic effects

Chronic effects from inhalation of fluorides may include:

* fluorosis
	+ osteosclerosis, brittle bones, joint stiffness and weakness
* weight loss
* malaise
* anaemia, and
* discolouration of teeth.

High chronic exposure to either hydrogen fluoride or fluorine may cause:

* lethal pulmonary oedema
* tracheobronchitis
* haemorrhagic alveolitis, and
* adult respiratory disease syndrome.

Renal injury, thyroid injury, anaemia, hypersensitivity and menstrual irregularities have all been documented.

Death is usually caused by respiratory paralysis.

## Carcinogenicity

Fluorides have not been classified as carcinogenic according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

## GHS classification

Different fluoride compounds may have different health hazard classifications. The specific fluoride compound that a worker is exposed to will need to be reviewed to ensure appropriate identification of the health hazards. The relevant classification can be located on the safety data sheet of the product the worker is using.

## Source documents

Agency for Toxic Substances and Disease Registry; Toxic Substances Portal – [Fluorides, Hydrogen Fluoride and Fluorine](https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=212&tid=38).

American Conference of Governmental Industrial Hygienists (ACGIH) (2017) Biological Exposure Indices; Fluorides.

[*Chemical analysis branch handbook, 9th Edition, Workplace and biological monitoring exposure analysis*](http://www.testsafe.com.au/__data/assets/pdf_file/0007/16387/Chemical-Analysis-Branch-Handbook-9th-edition-TS033.pdf), WorkCover NSW (PDF 3.39MB).

EU Scientific Committee on Occupational Exposure Limits (SCOEL) (1998) Recommendation from Scientific Committee on Occupational Exposure Limits for fluorine, hydrogen fluoride and inorganic fluorides (not uranium hexafluoride). SCOEL/SUM/56.

Lauwerys, R.R. and Hoet, P. (2001) *Industrial Chemical Exposure Guidelines for Biological Monitoring*, 3rd Ed, Lewis Publishers, Boca Raton.

Ly, J. and Shin, R.D. (2016) Fluoride Toxicity. *Medscape*.

National Industrial Chemicals Notification and Assessment Scheme; Human Health Tier II Assessment for [Bifluorides](https://www.nicnas.gov.au/chemical-information/imap-assessments/imap-group-assessment-report?assessment_id=1399).

Safe Work Australia (2013); [*Workplace Exposure Standards for Airborne Contaminants*](https://www.safeworkaustralia.gov.au/system/files/documents/1705/workplace-exposure-standards-airborne-contaminants-v2.pdf)(PDF 873KB).

Safe Work Australia; [*Hazardous Chemicals Information System*](http://hcis.safeworkaustralia.gov.au/).

Workplace Health and Safety Queensland (2015) [Fluoride health monitoring guidelines](https://www.worksafe.qld.gov.au/__data/assets/pdf_file/0003/96672/health-monitoring-fluoride-guidelines.pdf) (PDF 365KB).



Health monitoring report

Fluorides



# Health monitoring report – Fluorides

**This health monitoring report is a confidential health record and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with the consent of the worker.**

There are two sections. Complete both sections and all questions as applicable.

**Section 1** A copy of this section should be forwarded to the person conducting the business or undertaking (PCBU) who has engaged your services.

**Section 2** may contain confidential health information. Information that is required to be given to the PCBU should be summarised in Section 1.

Section 1 – A copy of this section to be provided to the PCBU

Person conducting a business or undertaking

**Company/organisation name:** Click here to enter text.

**Site address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Site Tel:** Click here to enter text. **Site Fax:** Click here to enter text.

**Contact Name:** Click here to enter text.

Other businesses or undertakings engaging the worker [ ]  N/A
(include a separate section for each PCBU)

**Company/organisation name:** Click here to enter text.

**Site address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Site Tel:** Click here to enter text. **Site Fax:** Click here to enter text.

**Contact Name:** Click here to enter text.

Worker details (tick all relevant boxes)

**Surname:** Click here to enter text. **Given names:** Click here to enter text.

**Date of birth:** Click here to enter a date. **Sex:** [ ]  Male [ ]  Female

**Address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Current job:** Click here to enter text.

**Tel (H):** Click here to enter text. **Mob:** Click here to enter text.

**Date started employment:** Click here to enter a date.

Employment in fluoride risk work (tick all relevant boxes)
(information provided by the PCBU)

**Type of fluoride used (if known please specify):** Click here to enter text.

[ ]  New to fluoride work

[ ]  New worker but not new to fluoride work

[ ]  Current worker continuing in fluoride work

**Worked with fluoride since:** Click here to enter a date.

**Risk assessment completed:** [ ]  Yes [ ]  No

Work environment assessment (tick all relevant boxes)
(information provided by the PCBU)

**Date of assessment:** Click here to enter a date.

**Fluoride industry/use**

[ ]  Insecticides [ ]  Floor polishes

[ ]  Petroleum [ ]  Aluminium

[ ]  Glass and non-metal product etching [ ]  Timber preservation

[ ]  Dietary supplement and toothpaste manufacture

[ ]  Water treatment [ ]  Semiconductor industry

[ ]  Manufacture of chemicals, solvents and plastics for laundries

[ ]  Corrosion inhibitor [ ]  Electroplating agents

[ ]  Flux agents for casting or joining [ ]  Fixing agents

[ ]  Welding and soldering agents [ ]  Drilling

[ ]  Metal extraction and refining [ ]  Metal surface treatment

[ ]  Domestic: cleaning/washing agent and etching creams or solutions.

[ ]  Other (specify): Click here to enter text.

|  |
| --- |
| **Other chemicals the worker may be exposed to:** Click here to enter text. |

| Controls |  |  |
| --- | --- | --- |
| Wear gloves | [ ]  Yes | [ ]  No |
| Respirator use | [ ]  Yes | [ ]  No |
| Respirator type Click here to enter text. |
| Local exhaust ventilation | [ ]  Yes | [ ]  No |
| Overalls/work clothing | [ ]  Yes | [ ]  No |
| Laundering by employer | [ ]  Yes | [ ]  No |
| Wash basins and showers (with hot and cold water) | [ ]  Yes | [ ]  No |
| Other please specify |  |  |

Health monitoring results

**Biological monitoring results**

Include/attach test results that indicate whether or not the worker has been exposed

| Date | Tests performed | Recommended action or comment |
| --- | --- | --- |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |
| Click here to enter text. | Click here to enter text. | Click here to enter text. |

|  |
| --- |
| **Comments about health monitoring results (for example any early indications or diagnosis of injury, illness or disease):** Click here to enter text. |

Recommendations (by registered medical practitioner) (tick all relevant boxes)

**Further/additional health monitoring for worker**

[ ]  This is the final health monitoring report

[ ]  Repeat health assessment in Click here to enter text. month(s) / Click here to enter text. week(s)

[ ]  Counselling required

[ ]  Medical examination by registered medical practitioner. On Click here to enter a date.

[ ]  Referred to Medical Specialist (respiratory/dermatology/other). On Click here to enter a date.

**Recommendations to PCBU**

[ ]  The worker is suitable for work with fluorides

[ ]  Review workplace controls

[ ]  The worker should be removed from work with fluorides. On Click here to enter a date.

[ ]  The worker is fit to resume work. On Click here to enter a date.

[ ]  Biological monitoring results indicate unacceptably high exposure levels

**Specialist’s name:** Click here to enter text.

**Additional comments or recommendations:** Click here to enter text.

Registered medical practitioner (responsible for supervising health monitoring)

**Name:** Click here to enter text.

| ****Signature:**** |
| --- |
|  |

**Date:** Click here to enter a date.

**Tel:** Click here to enter text. **Fax:** Click here to enter text.

**Registration Number:** Click here to enter text.

**Medical Practice:** Click here to enter text.

**Address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

Section 2 – This section to be retained by the registered medical practitioner

Person conducting a business or undertaking

**Company/organisation name:** Click here to enter text.

**Site address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Site Tel:** Click here to enter text. **Site Fax:** Click here to enter text.

**Contact Name:** Click here to enter text.

Other businesses or undertakings engaging the worker [ ]  N/A

**Company/organisation name:** Click here to enter text.

**Site address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Site Tel:** Click here to enter text. **Site Fax:** Click here to enter text.

**Contact Name:** Click here to enter text.

Worker details (tick all relevant boxes)

**Surname:** Click here to enter text. **Given names:** Click here to enter text.

**Date of birth:** Click here to enter a date.

**Sex:** [ ]  Male [ ]  Female [ ]  Pregnant/breastfeeding

**Address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

**Current job:** Click here to enter text.

**Tel (H):** Click here to enter text. **Mob:** Click here to enter text.

**Date started employment:** Click here to enter a date.

**Type of fluoride used (if known please specify):** Click here to enter text.

Past employment and exposure details (tick all relevant boxes)

**Have you ever worked in any of the following jobs?**

If you answered ‘yes’ to any of the questions, please advise if you experienced any symptoms such as cough or wheeze or asthma when working.

| **Manufacture of** |  |  | **Comments** (all ‘yes’ answers) |
| --- | --- | --- | --- |
| Insecticides | [ ]  No | [ ]  Yes | Click here to enter text. |
| Floor polishes | [ ]  No | [ ]  Yes | Click here to enter text. |
| Petroleum | [ ]  No | [ ]  Yes | Click here to enter text. |
| Aluminium | [ ]  No | [ ]  Yes | Click here to enter text. |
| Glass and non-metal product etching | [ ]  No | [ ]  Yes | Click here to enter text. |
| Timber preservation | [ ]  No | [ ]  Yes | Click here to enter text. |
| Dietary supplement and toothpaste manufacture | [ ]  No | [ ]  Yes | Click here to enter text. |
| Water treatment  | [ ]  No | [ ]  Yes | Click here to enter text. |
| Semiconductor industry | [ ]  No | [ ]  Yes | Click here to enter text. |
| Chemicals, solvents and plastics for laundries | [ ]  No | [ ]  Yes | Click here to enter text. |
| Corrosion inhibitor | [ ]  No | [ ]  Yes | Click here to enter text. |
| Electroplating agents | [ ]  No | [ ]  Yes | Click here to enter text. |
| Flux agents for casting or joining | [ ]  No | [ ]  Yes | Click here to enter text. |
| Fixing agents | [ ]  No | [ ]  Yes | Click here to enter text. |
| Welding and soldering agents | [ ]  No | [ ]  Yes | Click here to enter text. |
| Drilling | [ ]  No | [ ]  Yes | Click here to enter text. |
| Metal extraction and refining | [ ]  No | [ ]  Yes | Click here to enter text. |
| Metal surface treatment | [ ]  No | [ ]  Yes | Click here to enter text. |
| Cleaning/washing agent and etching creams or solutions.  | [ ]  No | [ ]  Yes | Click here to enter text. |

General health questionnaire (tick all relevant boxes)

|  |  |  |  |
| --- | --- | --- | --- |
| Did you suffer any incapacity lasting two weeks or longer in the last two years | [ ]  No | [ ]  Yes | Click here to enter text. |
| Have you ever had any operations or accidents or been hospitalised for any reason | [ ]  No | [ ]  Yes | Click here to enter text. |
| Are you currently being treated by a doctor or other health professional for any illness or injury | [ ]  No | [ ]  Yes | Click here to enter text. |
| Are you currently receiving any medical treatment or taking any medications. Please detail. | [ ]  No | [ ]  Yes | Click here to enter text. |
| Do you practice personal hygiene at work, for example nail biting, frequency of hand washing, eating or smoking, clean shaven, shower and change into clean clothes at end of shift | [ ]  No | [ ]  Yes |  |

Specific health questions (tick all relevant boxes)

**Do you have or have you ever had:**

|  |  |  |  | **Comments** (all ‘yes’ answers) |
| --- | --- | --- | --- | --- |
| Blurred vision or other vision problems  | [ ]  No | [ ]  Yes | Click here to enter text. |
| Itchy eyes, runny or congested nose | [ ]  No | [ ]  Yes | Click here to enter text. |
| Chest pains or irregular heartbeats or suffered from rheumatic fever | [ ]  No | [ ]  Yes | Click here to enter text. |
| Shortness of breath on exertion | [ ]  No | [ ]  Yes | Click here to enter text. |
| Wheezing, bronchitis or asthma now or in the past  | [ ]  No | [ ]  Yes | Click here to enter text. |
| Any other lung or respiratory conditions (emphysema, pneumonia or sinusitis) | [ ]  No | [ ]  Yes | Click here to enter text. |
| Allergies, hay fever, or allergic bronchitis | [ ]  No | [ ]  Yes | Click here to enter text. |
| Liver disease (including alcohol related or other hepatitis) | [ ]  No | [ ]  Yes | Click here to enter text. |
| Severe stomach pain or peptic ulcers | [ ]  No | [ ]  Yes | Click here to enter text. |
| Kidney or bladder disease | [ ]  No | [ ]  Yes | Click here to enter text. |
| Back pain | [ ]  No | [ ]  Yes | Click here to enter text. |
| Any neurological condition affecting nerves in your feet or hands, your coordination or balance | [ ]  No | [ ]  Yes | Click here to enter text. |
| Heavy use or substance abuse of drugs or alcohol | [ ]  No | [ ]  Yes | Click here to enter text. |
| Skin disorders or dermatitis | [ ]  No | [ ]  Yes | Click here to enter text. |
| Any form of cancer | [ ]  No | [ ]  Yes | Click here to enter text. |
| Any other significant health conditions | [ ]  No | [ ]  Yes | Click here to enter text. |

General health assessment (if applicable)

**Height:** Click here to enter text. cm **Weight:** Click here to enter text. kg

**BP:** Click here to enter text. / Click here to enter text. mmHg

**Urinalysis**

**Blood:** [ ]  Normal [ ]  Abnormal

**Protein:** Click here to enter text. **Referred for further testing**

**Sugar:** Click here to enter text. [ ]  No [ ]  Yes

| **Respiratory system** |  |  | **Medical comments** (for all abnormal) |
| --- | --- | --- | --- |
| Breathing normal and regular in character | [ ]  Yes | [ ]  No | Click here to enter text. |
| Auscultation normal | [ ]  Yes | [ ]  No | Click here to enter text. |
| Signs of past/present respiratory disease | [ ]  No | [ ]  Yes | Click here to enter text. |
| Spine |  |  |  |
| Normal range of movement | [ ]  Yes | [ ]  No | Click here to enter text. |

**Chest X-ray (if required)**

All chest X-rays undertaken by a specialist radiology clinic and must be read by registered medical radiation practitioner (radiologist).

**Date of X-ray:** Click here to enter text. **Meets quality criteria?** [ ]  Yes [ ]  No

**X-ray reported as:** Click here to enter text. **ILO Classification:** Click here to enter text.

| **Skin** |  |  | **Medical comments** (for all abnormal) |
| --- | --- | --- | --- |
| Eczema, dermatitis or allergy | [ ]  No | [ ]  Yes | Click here to enter text. |
| Skin cancer or other abnormality | [ ]  No | [ ]  Yes | Click here to enter text. |
| Evidence of nail biting | [ ]  No | [ ]  Yes | Click here to enter text. |
| Other | [ ]  No | [ ]  Yes | Click here to enter text. |



Figure 1 Template of the human body to indicate the location of abnormalities

| **Eye** |  |  | **Medical comments** (for all abnormal) |
| --- | --- | --- | --- |
| Evidence of eye irritation | [ ]  No | [ ]  Yes | Click here to enter text. |

Biological monitoring results

Include/attach at least the previous two test results (if available)

| Date | Tests performed | Recommended action or comment |
| --- | --- | --- |
| Click here to enter a date. | Click here to enter text. | Click here to enter text. |
| Click here to enter a date. | Click here to enter text. | Click here to enter text. |
| Click here to enter a date. | Click here to enter text. | Click here to enter text. |
| Click here to enter a date. | Click here to enter text. | Click here to enter text. |

Other medical history, family medical history, current medication, comments, tests or recommendations (use separate sheet if necessary)

Click here to enter text.

Registered medical practitioner (responsible for supervising health monitoring)

**Name:** Click here to enter text.

| ****Signature:**** |
| --- |
|  |

**Date:** Click here to enter a date.

**Tel:** Click here to enter text. **Fax:** Click here to enter text.

**Registration Number:** Click here to enter text.

**Medical Practice:** Click here to enter text.

**Address:** Click here to enter text.

**Suburb:** Click here to enter text. **Postcode:** Click here to enter text.

1. American Conference of Governmental Industrial Hygienists (ACGIH) (2017) Biological Exposure Indices; Fluorides. These values are lower than the Biological Occupational Exposure Limit of 5 mg/L (42 mmol/mol creatinine; 370 µmol/L) published in [Chemical analysis branch handbook, 9th Edition, Workplace and biological monitoring exposure analysis](http://www.testsafe.com.au/__data/assets/pdf_file/0007/16387/Chemical-Analysis-Branch-Handbook-9th-edition-TS033.pdf), WorkCover NSW (PDF 3.39MB). [↑](#footnote-ref-1)