

# Health monitoring

*Guide for trichloroethylene*



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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.

# Trichloroethylene

Trichloroethylene (CAS 79-01-6) is a colourless, volatile liquid with a sweet chloroform-like smell.

*Synonyms:* 1,1,2-trichloroethene, 1,1-dichloro-2-chloroethylene, 1-chloro-2,2-dichloroethylene, acetylene trichloride, TCE, trethylene, triclene, tri, trimar, trilene and HCC-1120.

## Work activities that may represent a high risk exposure

Trichloroethylene is a non-flammable chlorinated solvent used widely as a metal degreaser and electrical equipment cleaner. It is also used in adhesives, water-proofing agents, paint strippers and carpet shampoo.

The major uses of trichloroethylene are:

- vapour degreasing and cold cleaning of manufactured metal parts
- industrial dry cleaning
- printing and the production of printing ink
- extraction solvent for greases, oils, fats, waxes, tars
- paint production
- textile industry to scour cotton, wool and other fabrics (removes oils and lubricants) and in waterless dyeing and finishing
- chemical intermediate in production of other chemicals, such as refrigerants
- used in production of consumer products e.g. paint removers/ strippers, adhesives, stain removers and rug cleaning fluids, and
- general industrial use as a solvent and cleaning product.

## Sources of non-occupational exposure

Trichloroethylene can be released to air water and soil at places where it is produced or used. It is broken down quickly in air but breaks down very slowly in soil and water, removed mostly through evaporation in air. Trichloroethylene remains in ground water for a long time since it is unable to evaporate. It may also be found in:

- paint removers/strippers
- adhesives
- stain removers and rug cleaning fluids
- electrical equipment solvents
- metal degreasing solvents
- waterproofing agents, and
- tyre cleaning products.

## 1. Health monitoring for trichloroethylene under the Work Health and Safety (WHS) Regulations

Collection of demographic, medical and occupational history

Physical examination with emphasis on the central nervous system

Urinary trichloroacetic acid or trichloroethane level

### Health monitoring before starting work in a trichloroethylene process

Health monitoring for trichloroethylene 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 trichloroethylene
- how to recognise and report symptoms, and
- what is involved in the health monitoring program, for example the frequency of testing and that tests may be needed.

An initial physical examination should place emphasis on the central nervous system (CNS) if work and medical history indicates this is necessary, for example through the presence of symptoms.

Trichloroethylene is a skin sensitiser and previous work history with this chemical and symptoms of sensitisation should be investigated.

Trichloroethylene is a respiratory irritant and it is important to investigate respiratory symptoms. However, spirometry may not be required at this stage.

If frequent or particularly high exposure (half eight hour time weighted average (TWA) or greater) is suspected it is recommended that liver and kidney function tests are carried out at the beginning of work and at regular intervals thereafter.

## **During exposure to a trichloroethylene process**

### **2. Monitoring exposure to trichloroethylene**

Where workers are exposed, suspected of being exposed or are concerned about exposure to trichloroethylene, 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 trichloroethylene resulting in excessive exposure to workers or when workers develop symptoms of trichloroethylene exposure.

Trichloroethylene is well absorbed via all major routes of exposure. About 80 per cent of the absorbed dose is metabolised and excreted in the urine as trichloroethanol and trichloroacetic acid (29-50 per cent and 10-24 per cent, respectively, of absorbed trichloroethylene). The elimination of trichloroacetic acid in urine is extremely slow (half-life approximately 75 hours). Following inhalational exposure, approximately 10 per cent of trichloroethylene is excreted unchanged by the lungs.

The following tests should be used to test the worker's exposure levels:

- urinary trichloroacetic acid levels at the end of shift at the end of the working week.

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

#### **Biological exposure standard for trichloroethylene<sup>1</sup>**

*Urinary trichloroacetic acid:*

0.12 mmol/L

Urinary trichloroacetic acid levels are reflective of exposure by all routes. However, as trichloroacetic acid is a metabolite of other chlorinated solvents, such as tetrachloroethylene and 1,1,1-trichloroethane, urinary trichloroacetic acid levels are not a specific indicator of exposure to trichloroethylene.

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<sup>1</sup> See [Chemical analysis branch handbook, 9th Edition, Workplace and biological monitoring exposure analysis, WorkCover NSW \(PDF 3.39MB\)](#) for more details

As the elimination of trichloroacetic acid from the urine takes more than 24 hours and does not return to pre-shift levels before the start of the next shift. As such, there is a cumulative increase in pre-shift concentrations of this metabolite throughout the working week. It is recommended that sample collection occurs at the end of shift at the end of the working week, with urinalysis results reflective of exposure over the previous three to four days.

### **Other considerations**

There can be racial and ethnic differences in the production of trichloroacetic acid, due to differences in the levels of enzymes involved in trichloroethylene metabolism. A lower biological exposure standard may be justified for workers of racial and ethnic origin other than Caucasian, who may metabolise trichloroethylene at a slower rate.

There is an interaction between alcohol and trichloroethylene metabolism; alcohol intake may result in lower trichloroacetic acid levels, thus leading to an underestimation of exposure. Therefore, consideration of alcohol consumption is recommended.

### **Other health monitoring methods**

Other tests that may be used to test the worker's trichloroethylene exposure levels:

- blood levels of trichloroethanol
- blood levels of trichloroethylene, or
- exhaled air levels of trichloroethylene.

As with urinary trichloroacetic levels, the blood trichloroethanol level is a non-specific indicator of trichloroethylene exposure, and may indicate exposure or co-exposure to other chlorinated solvents. For this analytical technique, it is recommended that samples are collected at the end of shift at the end of the working week. The following value may be used as a guide for assessing trichloroethylene exposure:

*Blood trichloroethanol concentration<sup>2</sup>:*

0.5 mg/L

Blood levels and exhaled air levels of trichloroethylene are more specific indicators of trichloroethylene exposure than urinary trichloroacetic acid levels or blood trichloroethanol levels. However, there are limitations of these methods as indicators of the extent of trichloroethylene exposure.

Blood samples for measurement of trichloroethylene levels should be taken from workers during exposure to trichloroethylene, because blood levels of trichloroethylene decrease quickly after exposure. Avoiding sample contamination, particularly from exposed skin, is an important consideration. Given the variability in trichloroethylene blood levels that may occur, particularly dependent on the timing of sampling, this method may be used as a confirmatory test for trichloroethylene exposure rather than an indicator of the extent of exposure.

For the assessment of exhaled air levels of trichloroethylene, samples should be collected in an uncontaminated atmosphere as soon as possible after exposure. There can be large variability in the results, depending on the sampling time and the activity and build of the worker. Therefore, this method is better used as a confirmatory test for trichloroethylene exposure rather than an indicator of the extent of exposure.

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<sup>2</sup> American Conference of Governmental Industrial Hygienists (ACGIH) (2017) *Documentation of the Biological Exposure Indices, 7th Ed, Cincinnati.*

Liver and renal function tests may also be performed and compared to baseline levels if there is a clinical suspicion of organ damage or an expected high exposure (half eight hour TWA or greater), though the lack of specificity may make interpretation of results difficult.

### **Workplace exposure standard**

The workplace exposure standard for trichloroethylene is:

- TWA of 10 ppm (54 mg/m<sup>3</sup>), and
- short term (15 minute time weighted average) exposure limit (STEL) of 40 ppm (216 mg/m<sup>3</sup>).

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

**NOTE:** Trichloroethylene is readily absorbed through the skin and air monitoring results may not be a true indication of exposure.

### **Removal from work**

Where a medical examination indicates the worker is displaying symptoms of exposure to trichloroethylene 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 trichloroethylene-related work.

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

- the worker should be removed from work with trichloroethylene, 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 trichloroethylene-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 trichloroethylene-related work.

This assessment should take into consideration the clinical condition of the worker, the resolution of symptoms, the worker's biological monitoring results and remediation of the circumstances that led to the symptoms if possible.

## **At termination of work in a trichloroethylene process**

### **3. Final medical examination**

A collection of a specimen for urine trichloroacetic acid should be collected on the last shift on the last day of work and a final medical examination carried out as soon as practical thereafter.

Workers with health conditions or continuing symptoms due to trichloroethylene exposure 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 trichloroethylene

### 4. Route of occupational exposure

The most significant route of occupational exposure is via inhalation. Uptake can also occur through skin contact and accidental ingestion.

Trichloroethylene is well absorbed via these routes and is rapidly distributed throughout the body crossing the blood-brain barrier and the placental barrier and accumulates in adipose tissue.

### 5. Target organ/effect

The target organs and potential effects of trichloroethylene exposure include:

**Table 1** Target organs and potential effects of trichloroethylene exposure

Target organ	Effect
Central nervous system	<ul style="list-style-type: none"> <li>• CNS depression</li> <li>• Narcotic effects</li> <li>• Headache</li> <li>• Decreased psychomotor performance</li> </ul>
Liver	<ul style="list-style-type: none"> <li>• Hepatic damage</li> </ul>
Kidneys	<ul style="list-style-type: none"> <li>• Renal damage</li> <li>• Renal failure</li> <li>• Cancer</li> </ul>
Skin	<ul style="list-style-type: none"> <li>• Irritation</li> <li>• Burns</li> <li>• Blisters</li> </ul>
Respiratory tract	<ul style="list-style-type: none"> <li>• Dyspnoea</li> <li>• Asthma</li> <li>• Lung function decrements</li> </ul>



Target organ	Effect
Eyes	<ul style="list-style-type: none"> <li>• Irritation</li> <li>• Burning of the corneal epithelium</li> </ul>

## 6. Acute effects

### CNS

Effects of trichloroethylene exposure on the CNS include:

- narcotic effects
- headache
- drowsiness
- fatigue
- euphoria
- confusion
- dizziness
- paraesthesia
- impaired cognitive function
- decreased performance in perception, memory, reaction time, manual ability, and dexterity tasks
- tremors
- loss of consciousness
- coma, and
- death.

### Respiratory system

At low level exposure, trichloroethylene is relatively non-irritating to the respiratory tract. However, higher concentrations result in upper respiratory tract irritation and tachypnoea (rapid breathing). Pulmonary oedema may also occur.

### Cardiovascular system

Arrhythmias (for example sinus tachycardia and ventricular extra systoles) have been noted in exposed workers.

### Gastrointestinal system

Effects of trichloroethylene exposure on the gastrointestinal tract include:

- nausea and vomiting
- dyspepsia, and
- gastritis.

### Musculoskeletal system

Muscle necrosis has been reported following exposure to trichloroethylene vapours used to degrease metal.

### Hepatic system

Acute exposure may lead to liver damage and abnormal liver function tests (ALT and AST).

Acute unprotected exposure to high levels of trichloroethylene vapours can cause jaundice and death from acute massive liver necrosis.

### Renal system

Renal dysfunction may occur and renal failure has been noted from an acute exposure.

### **Skin**

Acute dermal exposure can result in:

- irritation
- rashes
- erythema, and
- burning sensation

### **Eyes**

Acute exposures can cause mild eye irritation with itchy, watery, inflamed eyes. Direct eye contact causes burning and irritation to the corneal epithelium and conjunctivitis.

## **7. Chronic effects**

The clinical picture is mainly related to the central nervous system effects that include:

- abnormal weakness or lack of energy
- anorexia
- headache
- impaired concentration
- loss of memory
- depression
- insomnia
- paraesthesia, and
- disturbances of the autonomic nervous system including:
  - hyperhidrosis
  - tachycardia, and
  - dermographism.

Other neurological effects include:

- mood swings
- trigeminal neuropathy
- cranial nerve VII damage
- impaired acoustic-motor function, and
- psychotic behaviour with impaired cognitive function.

### **Hepatic system**

Hepatomegaly and increases in serum liver enzymes (AST and ALT) have been associated with chronic occupational exposure.

### **Renal system**

Chronic trichloroethylene exposure may lead to altered renal function (increased N-acetyl- $\beta$ -D-glucosaminidase and urinary proteins) and renal toxicity.

### **Endocrine system**

Chronic exposure to trichloroethylene has been shown to cause an increased serum dehydroepiandrosterone sulfate and a decrease in serum testosterone, in occupationally exposed individuals. There is also an association between exposure to trichloroethylene and menstrual disturbances.

### **Immune and lymphatic system**

Chronic exposure may lead to hypersensitivity type reactions that may involve the skin, mucous membranes and the liver.

There is some evidence of association with scleroderma.

Immune dysfunction may occur with alterations noted in levels of selected serum cytokines, decreased IgG and IgM levels and decreases in selected lymphocyte subsets (T cells, CD4<sup>+</sup> T cells, CD8<sup>+</sup> T cells, B cells and natural killer (NK) cells).

### **Reproductive system**

There may be an association with increased risk of spontaneous abortions. There may be an association between reduced fecundability and trichloroethylene exposure.

## **8. Carcinogenicity**

Trichloroethylene has been classified as a Category 1B carcinogen according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as it is presumed to cause cancer in humans.

Evidence demonstrates a causal association between trichloroethylene and renal cancer. There also appears to be an association between exposure and several other cancers including liver, lungs, cervix and lymphatic cancers.

## **9. GHS classification**

The following GHS health hazard classification for trichloroethylene has been taken from Safe Work Australia's Hazardous Chemicals Information System:

### **Hazard category**

Carcinogenicity – category 1B

Germ cell mutagenicity – category 2 (suspected of causing genetic defects)

Eye irritation – category 2A

Skin irritation – category 2

Specific target organ toxicity (single exposure) – category 3  
(may cause drowsiness or dizziness)

### **Source documents**

Agency for Toxic Substances and Disease Registry (2014) [Draft Toxicological Profile for Trichloroethylene](#) (PDF 10.7MB).

American Conference of Governmental Industrial Hygienists (ACGIH) (2017) Documentation of the Biological Exposure Indices, 7th Ed, Cincinnati.

Centers for Disease Control and Prevention; The National Institute for Occupational Safety and Health; [Trichloroethylene](#).

[Chemical analysis branch handbook, 9th Edition, Workplace and biological monitoring exposure analysis](#), WorkCover NSW (PDF 3.39MB).

Health and Safety Executive (2008) [Trichloroethylene - Toxicological overview](#) (PDF 84KB).

Indoor Air Quality UK; Resources - [Trichloroethylene](#).

International Programme on Chemical Safety; Environmental Health Criteria; [Trichloroethylene](#) .

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

National Industrial Chemicals Notification and Assessment Scheme; [Trichloroethylene](#).

New Jersey Department of Health; Hazardous Substance Fact Sheet; [Trichloroethylene](#) (PDF 77KB).

Occupational Safety and Health Administration; Chemical Sampling Information; [Trichloroethylene](#) .

Safe Work Australia (2013); [Workplace Exposure Standards for Airborne Contaminants](#) (PDF 873KB).

Safe Work Australia; [Hazardous Chemicals Information System](#).

Scientific Committee on Occupational Exposure Limits (2009) Recommendation SCOEL/SUM/142; Trichloroethylene.

World Health Organization (2000); [Trichloroethylene](#) (PDF 218KB).



# Health monitoring report

*Trichloroethylene*



This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

## Health monitoring report – Trichloroethylene

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 (include a separate section for each PCBU)

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

**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 trichloroethylene risk work (tick all relevant boxes) (information provided by the PCBU)

New to trichloroethylene work

This form contains confidential information and must not be disclosed to another person except in accordance with the Work Health and Safety Regulations or with consent of the worker

- New worker but not new to trichloroethylene work
- Current worker continuing in trichloroethylene work

**Worked with trichloroethylene 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.](#)

**Trichloroethylene industry/use**

- Metal forming, machining and cleaning
- Industrial dry cleaning
- Textile industry
- Printing industry
- Degreasing
- Chemical processing
- Production of consumer goods
- Other (specify):

**Other chemicals the worker may be exposed to:** [Click here to enter text.](#)

**Controls**

Eye protection	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Wear gloves	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Respirator use	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Respirator type	<a href="#">Click here to enter text.</a>	
Local exhaust ventilation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Overalls/work clothing	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Laundering by employer	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Emergency eye wash and showers (with hot and cold water)	<input type="checkbox"/> Yes	<input type="checkbox"/> 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
<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

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



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### 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 trichloroethylene
- Review workplace controls
- The worker should be removed from work with trichloroethylene. 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:**

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**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.](#)

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## 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.

### 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.

			Comments (all 'yes' answers)
Metal forming, machining and cleaning	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Vapour degreasing and cold cleaning of manufactured metal parts	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Industrial dry cleaning	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Chemical processing	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.

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### Comments (all 'yes' answers)

Textile industry	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Production of consumer products e.g. Type writer correction fluids, paint removers/ strippers, adhesives, stain removers and rug cleaning fluids	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Printing or the production of printing ink	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Other (please specify)	<input type="checkbox"/> No	<input type="checkbox"/> 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	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Have you ever had any operations or accidents or been hospitalised for any reason	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Are you currently being treated by a doctor or other health professional for any illness or injury	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Are you currently receiving any medical treatment or taking any medications. Please detail.	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Do you currently smoke	<input type="checkbox"/> No	<input type="checkbox"/> 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	<input type="checkbox"/> No	<input type="checkbox"/> Yes	

### Specific health questions (tick all relevant boxes)

#### Do you have or have you ever had:

<b>Blurred vision or other vision problems</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Itchy eyes, runny or congested nose	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Loss of hearing or ringing in the ears	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Shortness of breath on exertion	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Wheezing, bronchitis or asthma now or in the past	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.

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Any other lung or respiratory conditions - emphysema, pneumonia or sinusitis	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Allergies, hay fever, or allergic bronchitis	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Liver disease (including alcohol related or other hepatitis)	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Kidney or bladder disease	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Anaemia or other blood disorders	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Chronic fatigue or tiredness	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Significant weight loss	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Psychiatric or nervous condition (including anxiety, depression or severe or abnormal stress reaction)	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Any neurological condition affecting nerves in your feet or hands, your coordination or balance	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Skin disorders or dermatitis	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Any form of cancer	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Any other significant health conditions	<input type="checkbox"/> No	<input type="checkbox"/> 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.

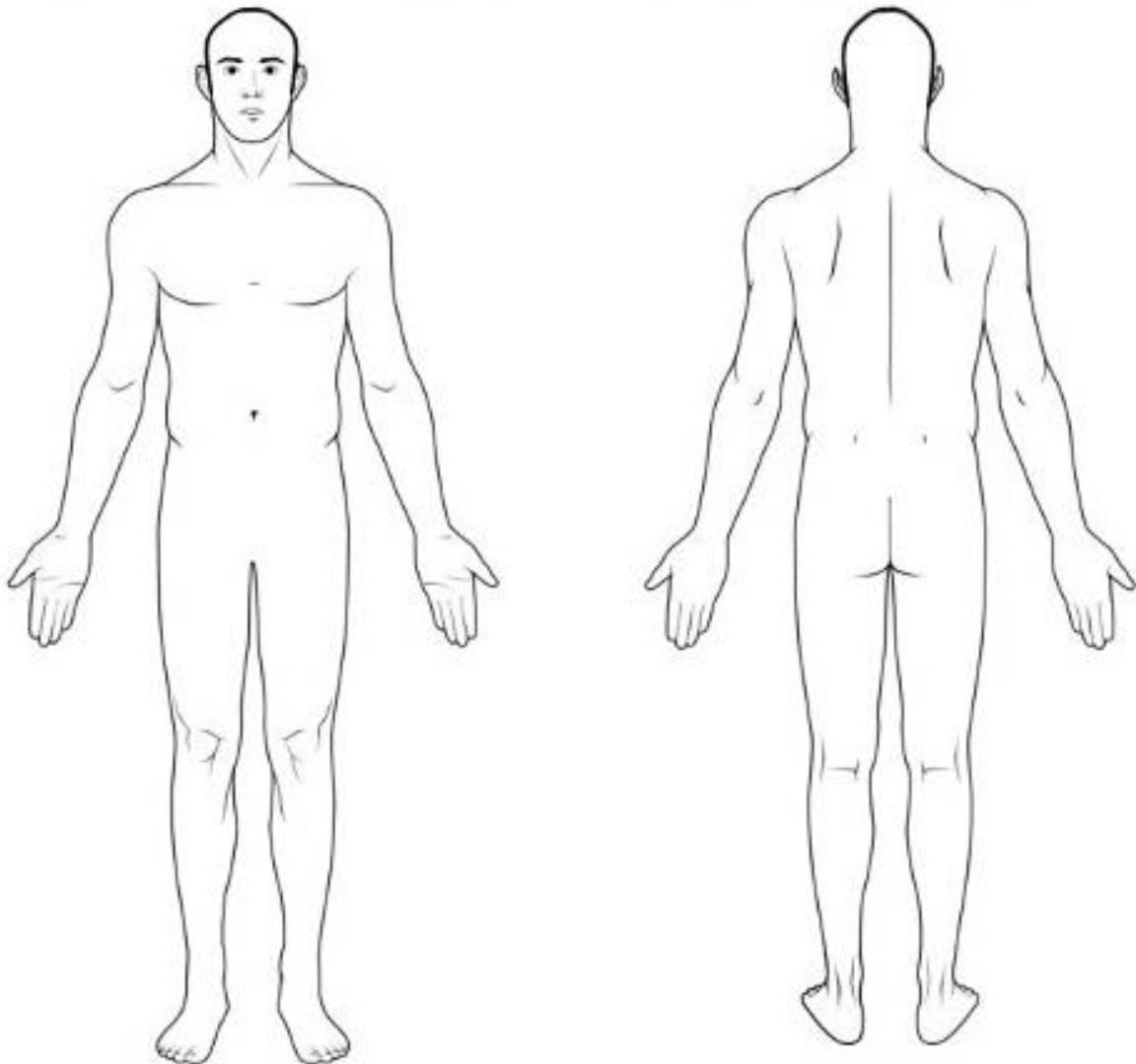
No  Yes

<b>Cardiovascular system</b>			<b>Medical comments (for all yes/abnormal)</b>
Blood pressure	<input type="checkbox"/> Normal	<input type="checkbox"/> Abnormal	Click here to enter text.
Heart rate	<input type="checkbox"/> Normal	<input type="checkbox"/> Abnormal	Click here to enter text.
Heart sounds	<input type="checkbox"/> Normal	<input type="checkbox"/> Abnormal	Click here to enter text.
Murmurs present	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
Evidence of cardiac failure/oedema	<input type="checkbox"/> No	<input type="checkbox"/> Yes	Click here to enter text.
<b>Abdomen</b>			
Abdomen soft	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Click here to enter text.

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<b>Cardiovascular system</b>		<b>Medical comments</b> (for all yes/abnormal)	
Liver enlargement	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.	
<b>Respiratory system</b>			
Breathing normal and regular in character	<input type="checkbox"/> Yes <input type="checkbox"/> No	Click here to enter text.	
Auscultation normal	<input type="checkbox"/> Yes <input type="checkbox"/> No	Click here to enter text.	
Signs of past/present respiratory disease	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.	

<b>Skin</b>	<b>Medical comments</b> (for all abnormal)	
Eczema, dermatitis or allergy	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.
Skin cancer or other abnormality	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.
Evidence of nail biting	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.
Other	<input type="checkbox"/> No <input type="checkbox"/> Yes	Click here to enter text.



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

Eye	Medical comments (for all abnormal)	
Evidence of eye irritation	<input type="checkbox"/> No	<input type="checkbox"/> Yes

### 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.