

Health monitoring

Guide for toluene



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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.

Toluene

Toluene (CAS 108-88-3) is colourless, highly flammable, water insoluble liquid with an odour like benzene.

Toluene is a monocyclic aromatic hydrocarbon produced during the process of refining crude oil for gasoline and other fuels.

Synonyms: methyl benzene, toluol, phenylmethane, methacide

Work activities that may represent a high risk exposure

Toluene is widely used as an octane booster in gasoline and is used in making paints, inks, lacquers, paint thinners, adhesives, fingernail polish, leather tanning processes, cleaning agents, rubber, detergents, dyes, glues and pharmaceuticals. Toluene is often used as a substitute for benzene in many applications. Toluene is highly volatile and can be present in the air of a workroom as vapour.

Sources of non-occupational exposure

Toluene is found in paints, paint strippers, glues and household cleaners. The deliberate inhalation of these products can lead to exposure to very high toluene levels.

Solvent abusers may be exposed to concentrations ranging from 3,750 to 37,500 mg/m³ (10 to 10,000 ppm).

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

Collection of demographic, medical and occupational history

Records of personal exposure

Physical examination

Baseline blood sample for haematological profile

Urinary o-cresol

Health monitoring before starting work in a toluene process

Health monitoring for toluene 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 toluene
- 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.

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

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

A blood sample for a haematological profile should be used to record the worker's baseline health status.

During exposure to a toluene process

2. Monitoring exposure to toluene

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

Absorption of inhaled toluene has been estimated to be about 40 to 60 per cent. Toluene may also be absorbed through the skin. Most of the absorbed toluene (60 to 80 per cent) is metabolised to benzoic acid, which is then conjugated with glycine to form hippuric acid. About one per cent of absorbed toluene is metabolised to *o*-cresol.

Approximately 15 to 20 per cent of absorbed toluene is exhaled and less than 0.005 per cent is excreted unchanged in urine.

The following test may be used to test the worker's toluene exposure levels:

- urinary *o*-cresol analysis.

Where urinalysis is carried out, the following value should be considered when assessing exposure to toluene:

Biological exposure standard for toluene¹

Urinary o-cresol:

0.5 mmol/mol creatinine (4.6 µmol/L)

While urinary *o*-cresol is only a minor metabolite of toluene (one per cent), its levels provide a more specific indication of toluene exposure than urinary hippuric acid levels (see the following section for a further discussion of urinary hippuric acid levels). Urinary *o*-cresol levels can be confounded by smoking (predominantly) and other environmental factors, but is generally considered a specific and sensitive parameter of workplace exposure to toluene². Non-occupational or background urinary levels of *o*-cresol are generally less than 0.06 mmol/mol creatinine.

Urine samples should be collected at the end of the shift. Results reflect exposure over a work day and can be used to assess low levels of exposure.

It should be noted that alcohol consumption may result in lower than expected urinary *o*-cresol levels (due to interference with toluene metabolism), and thus may provide an underestimation of toluene exposure. Results above the exposure standard or if there are concerns regarding alcohol consumption, confirmation with a subsequent test or a more definitive test such as urinary toluene measurements should be considered.

For workers exposed to relatively high levels of toluene, complete blood analysis may be used to monitor possible changes related to exposure. The haematological profile should be compared with the baseline profile. When assessing adverse health effects key indicators are haemoglobin and haematocrit for anaemia and myelodysplastic changes.

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

² Angerer, J. and A. Krämer. (2012) [Toluene, Addendum \[BAT Value Documentation, 1998b\]](#). *Biological Exposure Values for Occupational Toxicants and Carcinogens*, Vol. 3.

Other health monitoring methods

Other biological tests that may be used (or have been used) to test worker exposure to toluene include:

- urinary hippuric acid
- urinary toluene, or
- blood toluene levels.

Urinary hippuric acid has been used as an indicator of toluene exposure. Hippuric acid is a glycine conjugate of benzoate. Benzoates are found in many foods and beverages (for example fruit juices, beer, fizzy drinks, jams, preserves and marmalade) and a high and variable background level of urinary hippuric acid levels may be seen. Because of this it may be difficult to discern the extent of occupational exposure to toluene. This method is not recommended to be used in isolation due to a lack of specificity and sensitivity.

Urinary toluene levels may be used as an indicator of toluene exposure. The test is specific for toluene. Background levels in individuals with no occupational exposure are generally below 0.001 to 0.002 mg/L. Samples should be collected at the end of shift, with results indicative of exposure over the work day. Sampling for urinary toluene requires a clean room to avoid contamination and sampling needs to avoid loss of toluene as a volatile analyte. As urinary toluene is excreted by passive diffusion, results should not be normalised to creatinine concentration. If this method is used, the following value may be used as a guidance value:

Urinary toluene (end of shift)³:

0.03 mg/L

Blood toluene levels are another specific indicator of toluene exposure. End of shift levels provide an indication of exposure over that day, while pre-shift levels provide an indication of exposure on the preceding day or days. Special consideration should be given to avoid contamination during sample collection. As alcohol consumption interferes with toluene metabolism, unusually high blood toluene levels may be seen in individuals that have been occupationally-exposed to toluene and have consumed alcohol. While the high blood toluene levels in these individuals may give an overestimation of inhalational exposure, it may not necessarily indicate an overestimation of adverse health effects.

If this method is used, the following values may be used as guidance values:

Blood toluene (end of shift)⁴:

0.6 mg/L

Blood toluene (pre-shift)³:

0.02 mg/L

Workplace exposure standard

The workplace exposure standard for toluene is:

- eight hour time weighted average (TWA) of 50 ppm (191 mg/m³), and
- short term (15 minute time weighted average) exposure limit (STEL) of 150 ppm (574 mg/m³).

³ American Conference of Governmental Industrial Hygienists (ACGIH) (2017) *Biological Exposure Indices; Toluene*.

⁴ DFG (2015) *List of MAK and BAT Values*.

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: Toluene 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 toluene 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 toluene-related work.

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

- the worker should be removed from work with toluene
- the PCBU should review control measures and carry out recommended remedial action.

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

Return to work

Should a worker be removed from toluene-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 toluene-related work.

This assessment should take into consideration the clinical condition of the worker, the worker's urinary *o*-cresol levels and remediation of the circumstances that led to the symptoms if possible.

At termination of work in a toluene process

3. 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. Emphasis should be placed on the CNS and respiratory system and any other organs or systems that were indicated during the health monitoring program.

A blood sample should be taken and results compared with the worker's baseline haematological profile. Workers with haematological abnormalities should be advised to seek continuing medical monitoring.

Workers with health conditions or continuing symptoms due to toluene 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 toluene

4. Route of occupational exposure

The primary route of exposure to toluene is via inhalation. Following inhalation 40 to 60 per cent of the chemical is absorbed in the respiratory tract.

Toluene can also be absorbed through the skin. Accidental ingestion may be possible, especially when eating or smoking with contaminated hands.

5. Target organ/effect

The target organs and potential effects of toluene exposure include:

Table 1 Target organs and potential effects of toluene exposure

| Target organ | Effect |
|------------------------|---|
| Central nervous system | <ul style="list-style-type: none"> • Headache • Dizziness • Nausea • Blurred vision • Euphoria • Fatigue • Loss of consciousness |
| Respiratory system | <ul style="list-style-type: none"> • Upper respiratory tract irritation |
| Blood/bone marrow | <ul style="list-style-type: none"> • Dysplasia • Anaemia |
| Skin | <ul style="list-style-type: none"> • Irritation |
| Eye | <ul style="list-style-type: none"> • Irritation |

6. Acute effects

CNS

The CNS is the primary target organ for toluene toxicity in humans and for both acute and chronic exposures.

Exposure to toluene causes both reversible and irreversible changes in the central nervous system. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to low or moderate levels of toluene by inhalation with symptoms including fatigue, sleepiness, headaches, and nausea.

CNS depression and death have occurred at higher levels of exposure.

CNS toxicity is generally discernible within a short time of exposure and pulmonary effects may not appear for up to six hours after exposure.

Generally, symptoms of CNS toxicity are apparent immediately after inhalation of high toluene concentrations and 30 to 60 minutes after ingestion.

Mild CNS effects include:

- headache
- light-headedness
- dizziness
- confusion
- nausea
- impaired judgment
- euphoria
- hallucinations
- tremor
- impaired gait
- blurred vision, and
- diplopia.

More severe effects include:

- convulsions
- loss of consciousness
- coma, and
- death.

Coma may be prolonged, though most victims regain consciousness rapidly when removed from the source of exposure.

Respiratory system

Acute exposure to toluene vapour can irritate the mucous membranes of the respiratory tract. With significant exposure, accumulation of fluid in the lungs (pulmonary oedema) and respiratory arrest may ensue. Pulmonary aspiration of toxic vomitus or ingested liquid toluene may cause chemical pneumonitis.

Cardiovascular system

Significant doses of toluene can cause cardiac abnormalities. Toluene may lower the threshold of the heart to the effects of epinephrine, causing hypo- or hypertension and cardiac arrhythmias. Cardiac arrhythmia has been reported as a cause of death in fatal acute inhalation of solvents containing toluene.

Renal system

Blood and protein in the urine can occur after massive inhalation. These effects are usually reversible if exposure is eliminated.

Renal tubular acidosis, glomerulonephritis, myoglobinuria, and renal failure have been observed.

Hematologic

Bone marrow dysplasia and anaemia have occurred after exposure to toluene. Decreased prothrombin has been reported after occupational toluene exposure.

Metabolic effects

After high-level exposure, toluene may cause an acid-base imbalance.

In toluene abusers, electrolyte and acid-base disturbances have resulted in distal renal tubular acidosis.

Symptoms include muscle weakness, nausea and vomiting due to an electrolyte balance secondary to renal acidosis.

Dermal

Liquid toluene can cause irritation and defatting after prolonged or repeated contact with the skin; redness and blisters may also occur.

Hepatic

Liver damage has been reported in solvent abusers.

Drinking alcohol may increase the liver damage caused by toluene.

Ocular

Eye irritation from toluene vapour begins at concentrations of ~ 300 ppm. When splashed in the eyes, toluene may cause transient symptoms including:

- burning pain
- blepharospasm
- conjunctivitis, and
- keratitis.

Gastrointestinal tract

Acute ingestion of toluene can lead to the same systemic effects as seen following inhalation as well as oropharyngeal and gastric irritation with, abdominal pain, vomiting.

7. Chronic effects

Chronic toluene exposures of less than 200 ppm have been associated with headaches, fatigue and nausea.

Workers repeatedly exposed at 200 to 500 ppm have reported loss of:

- coordination
- memory, and
- appetite.

Some workers have developed reversible disorders of the optic nerves after chronic exposure in the workplace.

Chronic solvent abuse can lead to permanent CNS damage and progressive encephalopathy. Other effects include:

- behavioural and personality changes
- confusion
- paranoid psychosis
- hallucinations
- memory loss
- impairment of speech, hearing and vision
- nystagmus, ataxia
- muscle weakness
- peripheral neuropathy, and
- tremors.

Long term toluene abusers may also develop disorders of the muscles, cardiovascular effects, renal tubular damage, and sudden death.

8. Carcinogenicity

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

9. GHS classification

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

Hazard category

Skin irritation – category 2

Specific target organ toxicity (repeated exposure) – category 2
(may cause damage to organs through prolonged or repeated exposure)

Reproductive toxicity – category 1A (may damage fertility or the unborn child)

Source documents

Agency for Toxic Substances and Disease Registry; Toxic Substances Portal;
[Toxicological Profile for Toluene](#).

American Conference of Governmental Industrial Hygienists (ACGIH) (2014) *Biological Exposure Indices*; Toluene.

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

Angerer, J. and A. Krämer. (2012) Toluene, Addendum [BAT Value Documentation, 1998b]. *Biological Exposure Values for Occupational Toxicants and Carcinogens*, Vol. 3. [Chemical analysis branch handbook, 9th Edition, Workplace and biological monitoring exposure analysis](#), WorkCover NSW (PDF 3.39MB).

DFG (2015) List of MAK and BAT Values.

Echeverria, D., Fine, L., Langolf, G., Schork, A. and Sampaio, C. (1989) Acute neurobehavioural effects of toluene. *Br. J. Ind. Med.* 46: 483-495.

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

Low, L.K., Meeks, J.R. and Mackerer, C.R. (1998) Health effects of the alkylbenzenes: toluene. *Toxicol. Ind. Health* 4: 4-75.

Meek, M.E. and Chan, P.K.L. (1994) Toluene: Evaluation of risks to human health from environmental exposure in Canada. *Environ. Carcin. Ecotoxicol. Rev.* C12: 507-515.

Nakajima, T. and Wang, R.-S. (1994) Mini-review: Induction of cytochrome P450 by toluene. *Int. J. Biochem.* 26: 1333-1340.

National Industrial Chemicals Notification and Assessment Scheme; Human Health Tier II Assessment for [Benzene, methyl-](#).

PubChem; Open Chemistry Database; [Compound Summary for CID 1140 Toluene](#).

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

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

Von Burg, R. (1993) Toxicology update: toluene. *J. Appl. Toxicol.* 13: 441-446.



Health monitoring report

Toluene

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 – Toluene

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

New to toluene 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 toluene work
- Current worker continuing in toluene work

Worked with toluene 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.](#)

Toluene industry/use

- Crude oil – refining
- Chemical industry

Manufacture of:

- Paints
- Inks
- Lacquers
- Paint thinners
- Adhesives
- Fingernail polish
- Leather tanning process
- Cleaning agents
- Rubber
- 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 | Click here to enter text. | |
| 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 |
|---|---|---|
| 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. |

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

| Date | Tests performed | Recommended action or comment |
|---|---|---|
| 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 toluene
- Review workplace controls
- The worker should be removed from work with toluene. 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.](#)

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

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) |
|---|-----------------------------|------------------------------|------------------------------|
| Refining crude oil for gasoline and other fuels | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Chemical industry | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Manufacture of: | | | |
| Paints | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Inks | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |

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

| | | | |
|-------------------------|-----------------------------|------------------------------|---------------------------|
| Lacquers | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Paint thinners | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Adhesives | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Fingernail polish | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Leather tanning process | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Cleaning agents | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Rubber | <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)

| | | | Comments (all 'yes' answers) |
|---|-----------------------------|------------------------------|------------------------------|
| 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:

| | | | Comments (all 'yes' answers) |
|---|-----------------------------|------------------------------|------------------------------|
| Blurred vision or other vision problems | <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. |
| Chest pains or irregular pulse | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| High blood pressure or heart disease (including heart attack, heart surgery, murmurs, angina) | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |

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| | Comments (all 'yes' answers) | | |
|---|------------------------------|------------------------------|---------------------------|
| Family history of heart disease | <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. |
| Any other lung or respiratory conditions (emphysema, pneumonia or sinusitis) | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Does anyone in your immediate family (blood relatives only) have asthma, hay fever or eczema | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Breathing problems, nasal blockage, nose bleeds or lump in nose | <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. |
| Fits, blackouts, dizziness or fainting | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Severe headaches or migraines | <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. |
| 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

| Cardiovascular system | Medical comments (for all yes/abnormal) | | |
|-----------------------|---|-----------------------------------|---------------------------|
| 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. |

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| Cardiovascular system | | | Medical comments (for all yes/abnormal) |
|---|---------------------------------|-----------------------------------|---|
| 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. |
| Respiratory system | | | Medical comments (for all abnormal) |
| 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. |
| Nervous system | | | |
| Muscular tone, co-ordination | <input type="checkbox"/> Normal | <input type="checkbox"/> Abnormal | Click here to enter text. |
| Tremor | <input type="checkbox"/> No | <input type="checkbox"/> Yes | Click here to enter text. |
| Skin | | | |
| 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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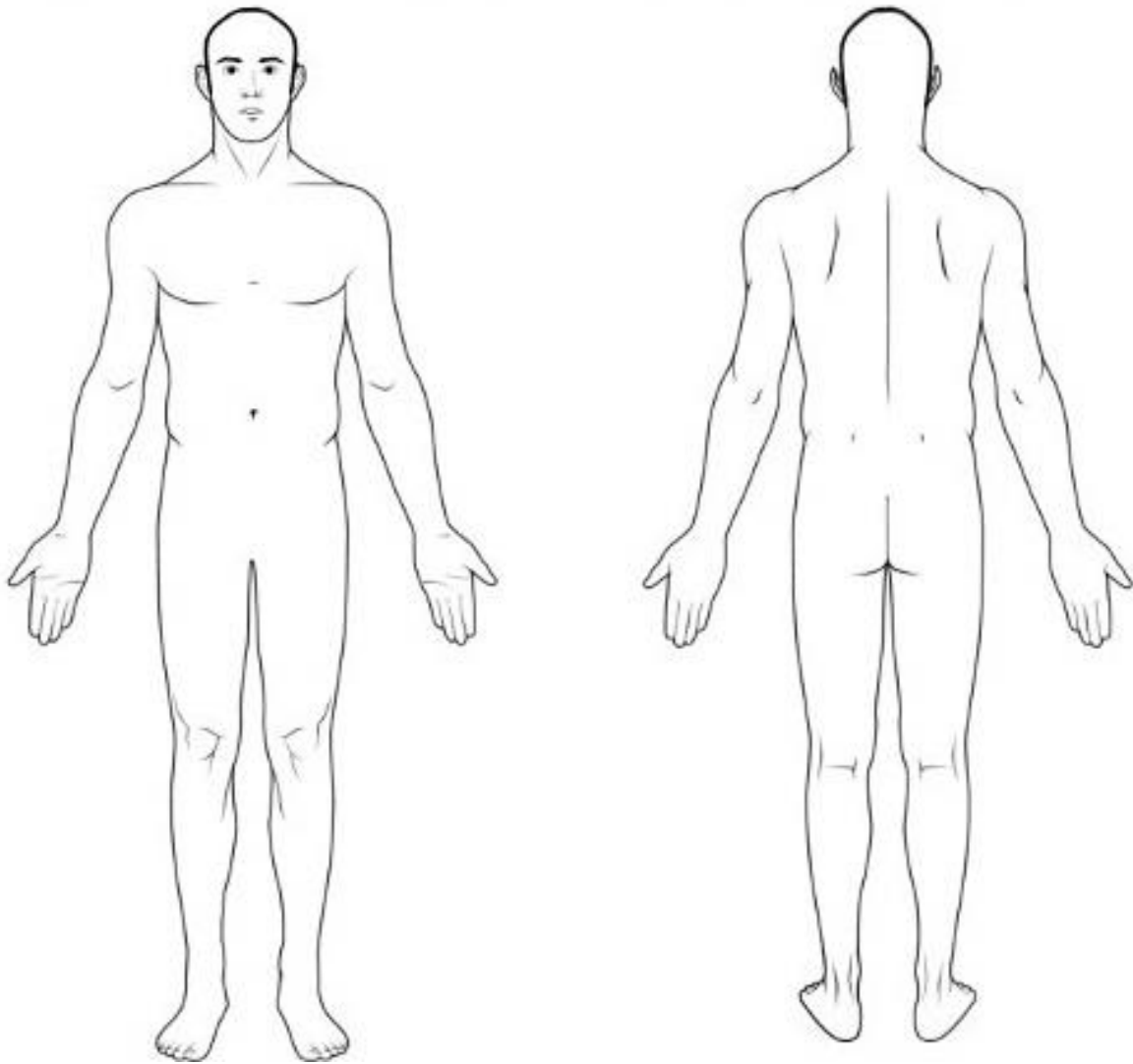


Figure 1 Template of the human body to indicate the location of abnormalities

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

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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.