

Task Hazard Analysis Workbook



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Guidelines

This workbook looks at concepts and methods to develop and conduct a Task Hazard Analysis at your workplace.

Various sample forms, checklists and other documents are included.

It is important to remember that these samples are only one approach. Employers and Joint Health and Safety Committees can use any method or format that works for their workplace.

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Introduction

Hazard Analysis is a method to systematically identify hazards and determine and devise control measures to eliminate the hazards or, if hazards cannot be eliminated, minimize the risks to workers.

The analysis process studies job tasks and their potential hazards in order to find safe and efficient ways of accomplishing the work.

The most preferred way is to apply control measures to eliminate the hazards altogether.

If it is not possible to eliminate the hazard, other control measures must be devised to minimize the risks the hazards present to workers.

In these situations i.e., when hazards cannot be eliminated, safe work procedures must be developed and implemented.

To effectively perform a hazard analysis and establish safe work procedures for a particular job function, a process must be followed.

The process includes:

- Examining the job – breaking it down into duties, tasks, and elements
- Identify tasks likely to present hazards
- Identify and assess the hazards
- Determine the risks to workers and others that may be harmed by the hazards identified
- Determine the course of action required to address the hazards
- Develop and implement safe work procedures if hazards cannot be eliminated.

Risk Assessment

5 Step Model to Risk Assessment

The following material from the “5 Step Model to Risk Assessment” has been adopted by WorkSafeBC for use in BC. It contains public sector information published by the Health and Safety Executive (HSE) and licensed under the Open Government Licence v1.0.

5 Steps to Risk Assessment

Assessing health and safety risks in the workplace

A risk assessment is an important step in protecting workers as well as complying with the law. It helps to maintain focus on the risks that really matter in the workplace—the ones with the potential to cause real harm.

In many instances, straightforward measures can readily control risks, for example ensuring spills are cleaned up promptly so people do not slip, or cupboard drawers are kept closed to ensure people do not trip. For most workplaces, that means simple, inexpensive and effective measures to ensure that the most valuable asset—the workforce—is protected.

The law does not expect the elimination of all risk, but does require employers to protect people as far as ‘reasonably practicable’. This risk assessment model explains how to achieve that with a minimum of fuss.

This is not the only way to do a risk assessment, there are other methods that work well, particularly for more complex risks and circumstances. However, for most organizations, this is a very straightforward method.

What is risk assessment?

A risk assessment is simply a careful examination of what, in your workplace, could cause harm to people, so that you can determine whether enough precautions have been taken or if more should be done to prevent harm.

Workers and others have a right to be protected from harm caused by a failure to take reasonable control measures.

Accidents and diseases can ruin lives and can have a serious impact on business if output is lost, machinery is damaged, insurance costs increase or results in legal action. Employers are legally required to assess risks in the workplace so that a plan to control those risks can be established.

To assess the risks in your workplace follow the five steps on the following pages.

Five Steps to Risk Assessment

 **Step 1** Identify the hazards

 **Step 2** Decide who might be harmed and how

 **Step 3** Evaluate the risks and decide on precautions

 **Step 4** Record your findings and implement them

 **Step 5** Review your assessment and update if necessary

The process need not be complicated. In many organizations, the risks are well known and the necessary control measures are easy to apply.

You probably already know whether, for example, there are workers who move heavy loads and could harm their backs in the process, or where people are most likely to slip or trip. If so, check that reasonable precautions have been put in place to avoid injury.

If you work in a small organization and you are confident that you understand what's involved, you can likely do the risk assessment yourself. You don't have to be a health and safety expert.

If you work in a larger organization, you could ask a health and safety advisor to help you. If you are not confident, get help from someone who is competent.

In all cases, make sure that all of the staff or their representatives are involved in the process. They will have useful information about how the work is done that will make the assessment of the risk more thorough and effective.

Remember, the employer is responsible for ensuring that the assessment is conducted properly.

When thinking about doing a risk assessment, remember:

- a **hazard** is anything that could cause harm, such as chemicals, electricity, working from ladders, an open drawer etc;
- the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.



Step 1 Identify the hazards

First you need to work out how people could be harmed. When you work in a place every day it is easy to overlook some hazards, so here are some tips to help you identify the ones that matter:

- Walk around the workplace and look at what could reasonably be expected to cause harm.
- Ask the workers or their representatives what they think. They may have noticed things that are not immediately obvious to you.
- Visit WorkSafeBC's website (www.worksafebc.com). WorkSafeBC publishes both general and industry specific guidelines on how to control hazards and there is more information on the site on how hazards might affect your business.
- If you are a member of a business association or trade union, contact them. Many produce very helpful industry or specific guidelines.
- Check manufacturers' instructions or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective.
- Have a look at your accident and first aid records - these often help to identify the less obvious hazards.
- Remember to think about long-term hazards to health (e.g. high levels of noise or exposure to harmful substances) as well as safety hazards.

Step 2 Decide who might be harmed and how

For each hazard you need to be clear about who might be harmed; it will help you identify the best way of managing the risk.

That doesn't mean listing everyone by name, but it does mean identifying groups of people (e.g. 'people working in the storeroom' or 'passers-by').

In each case, it is important to identify how they might be harmed, i.e. what type of injury or illness might occur.

For example, 'stockers' may suffer back injuries from repeatedly lifting boxes.

Remember:

- some workers have particular requirements, e.g. new and young workers, return to work claimants and people with disabilities may be at particular risk.

Extra thought will be needed for some hazards;

- cleaners, visitors, contractors, maintenance workers etc, who may not be in the workplace all the time;
- members of the public, if they could be hurt by your activities;
- if you share your workplace, you will need to think about how your work affects others present, as well as how their work affects your coworkers - talk to them; and
- ask the workers or your coworkers if they can think of anyone you may have missed.

Step 3 Evaluate the risks and decide on precautions

Having spotted the hazards, the next step is to decide what to do about them. The law requires employers to do everything ‘reasonably practicable’ to protect people from harm.

You can work this out for yourself, but the easiest way is to compare what you are doing with good practice. There are many sources of good practice, for example WorkSafeBC’s website (www.worksafebc.com) or Canada’s National Center for Occupational Health and Safety (www.ccohs.ca).

So first, look at what you’re already doing; think about what controls are already in place and how the work is organized. Then compare this with the good practice and see if there’s more you should be doing to bring your workplace up to standard. When asking yourself this, consider:

- Can I eliminate the hazard altogether?
- If not, how can I control the risks so that harm is unlikely?

When controlling risks, apply the principles below, if possible in the following order:

- try a less risky option (e.g. switch to using a less hazardous chemical);
- prevent access to the hazard (e.g. by guarding);
- organize work to reduce exposure to the hazard (e.g. put barriers between pedestrians and traffic);
- issue personal protective equipment (e.g. clothing, footwear, goggles etc); and
- provide facilities (e.g. first aid and washing facilities for removal of contamination).
- Improving health and safety need not cost a lot. For instance, placing a mirror on a dangerous blind corner to help prevent vehicle accidents is a low-cost precaution considering the risks. Failure to take simple precautions can cost a lot more if an accident does happen.
- Involve staff in the risk assessment to ensure that the proposed precautions will work in practice and won’t introduce any new hazards.

Step 4 Record your findings and implement them

Putting the results of the risk assessment into practice will make a difference when looking after people and the workplace.

Writing down the results of the risk assessment, and sharing them with staff, encourages this.

When writing down the results, keep it simple, for example, the results to address the risk of ‘Tripping over garbage: bins provided, staff instructed, weekly housekeeping checks’, or the risk of exposure to welding fumes ‘Fume from welding: local exhaust ventilation used and regularly checked’.

A risk assessment is not expected to be perfect, but it must be appropriate and sufficient. Employers need to be able to show that:

- an appropriate check was conducted;
- the people who might be affected were consulted;
- all the significant hazards were dealt with, taking into account the number of people who could be involved;
- the precautions are reasonable, and the remaining risk is low; and
- the staff or their representatives were involved in the process.

There is a template in the Appendix of this Workbook that you can print and use for your own hazard and risk assessment.

If, like many businesses, you find that there are many improvements that could be made, big and small, don’t try to do everything at once.

Make an action plan to deal with the most important things first. WorkSafeBC Safety and Hygiene Officers acknowledge the efforts of businesses that are clearly trying to make improvements.

A good action plan often includes a mixture of different things such as:

- a few inexpensive or easy improvements that can be done quickly, perhaps as a temporary solution until more reliable controls are in place;
- long-term solutions to those risks most likely to cause accidents or disease;
- long-term solutions to those risks with the worst potential consequences;
- arrangements for training employees on the main risks that remain and how they are to be controlled;
- regular checks to make sure that the control measures stay in place; and
- clear responsibilities – the plan should identify who will take responsibility for what action, and by what date.

Remember to prioritize and tackle the most important things first. As each action is completed, mark it complete on your action plan.



Step 5 Review your assessment and update if necessary

Few workplaces stay the same. Sooner or later, new equipment, substances and procedures that could lead to new hazards will be introduced. It makes sense, therefore, to review the risk assessment and the precautions.

Every year or so formally review it, to make sure the workplace is still improving, or at least not sliding back. Look at the risk assessment again. Have there been any changes? Are there improvements needed? Have the workers spotted a problem? Has anything been learned from accidents or near misses? Ensuring that the risk assessment is up to date is an important step in demonstrating due diligence.

When running a business it's all too easy to forget about reviewing the risk assessment - until something has gone wrong and it's too late. Why not set a review date for this risk assessment now? Write it down and note it in a logbook as an annual event.

During the year, if there is a significant change, don't wait. Check the risk assessment and, where necessary, revise it. If possible, it is best to think about the risk when planning any changes - that way there will be more flexibility.

Some frequently asked questions

What if the work done tends to vary a lot, or I (or workers) move from one site to another?

Identify the hazards are reasonably expected and assess the risks for them. This general assessment should put you in a good position for the majority of your work. When you take on new work or a jobsite that is different, cover any new or different hazards with a specific assessment. You do not have to start from scratch each time.

What if I share a workplace?

Tell the other employers and self-employed people working there about any risks your work could cause them, and what precautions you are taking. Also, think about the risks to your own workforce from those who share your workplace.

Do the workers also have responsibilities?

Yes. Workers have legal responsibilities to co-operate with their employer's efforts to improve health and safety (e.g. they must wear protective equipment when it is provided), and to look out for each other.

What if circumstances change for one or more workers?

You'll need to look at the risk assessment again. All employers are required to carry out a specific risk assessment for new or young workers as some jobs may not be appropriate for them. If a worker develops a disability then the employer is required to make reasonable adjustments. People returning to work following major surgery may also have particular requirements. If you put your mind to it, you can almost always find a way forward that works for the employer and for the workers.

What if the employer has already assessed some of the risks?

If, for example, hazardous chemicals are used in the workplace, the employer may have already assessed the risks to health and put precautions in place under Workplace Hazardous Material Information System (WHMIS).

Getting help

If you get stuck, don't give up. There is a wealth of information available to help you. More information about legal requirements and standards can be found on our website at: www.worksafebc.com, and in particular under the publications tab and in the WorkSafeBC stores.

Benefits of Safe Work Procedures

Because of the steps involved, it takes time to develop safe work procedures. There are, however, many benefits to both the worker and the employer of spending time to develop safe work procedures.

Most importantly, safe work procedures help to reduce risks of injury and disease to workers.

This workbook has a number of questions designed to get you thinking about the topic of “Task Hazard Analysis”. Space is provided for you to write down your answers. If a question has a right answer the answer is in the Appendix, if the question is an exercise to get you to think about a topic the answer will be on the next page.

What are some other benefits of having safe work procedures?

Answer is in the Appendix

Examining the Job and Breaking it Down

In order to identify hazards with a job, it is necessary to break the job down into levels and components that can help us to systematically and thoroughly identify the hazards.

Duty

The first high-level breakdown of a job is the identification of the main duties. A duty is a major area of responsibility. Duties provide an overview of the job components.

Even though it is possible to have only one duty, the average job consists of five to seven main duties. Therefore, if you were to list the five main functions of your job, you would be listing your duties.

Throughout this workbook, we will use the **Auto Service Technician Job** to demonstrate the process.

An example of a ‘Duty’ with the Auto Service Technician’s job would be, “Perform Spring/Fall Service”

Note that the wording shows a verb, (e.g. perform) followed by a noun, (e.g. service) to emphasize the action being performed.

Let’s try to come up with some additional duties for the Auto Service Technician.

Suggested answer on the next page.

Possible answers (duties) include:

- | | |
|------------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> Perform Spring/Fall Service | <input type="checkbox"/> Perform tune-up |
| <input type="checkbox"/> Maintain inventory | <input type="checkbox"/> Service brakes |
| <input type="checkbox"/> Change tires | <input type="checkbox"/> Change oil |

Task

A 'Task' is a further breakdown of a duty. A task, while still at a higher level, breaks the job down into more defined areas. A task, when completed, yields a useful result.

An example of an Auto Service Technician's task, related to the 'Perform Spring/Fall Service' Duty, is 'Change Tires – summer tires to winter tires or vice versa'. (Sometimes the task could just be 'Rotate Tires')

As you can see, changing the tires is still at a high enough level to be broken down even further into steps later.

Fill in the Job Hierarchy and Component Worksheet on the next page with the following:

- **Job:** Auto Service Technician
- **Duty:** Perform Spring/Fall Service
- **Task:** Change Tires, replace summer tires with winter tires etc.

What do you think are some of the other additional tasks associated with Auto Service Technician's duty of 'performing Spring/Fall Service?

Please record your answers in the 'Task' spaces on the chart below. Answers are in the Answer Key in the Appendix.

Job Hierarchy and Component Worksheet

Date: _____ Job: _____

Duty: _____

| Task | | | | | | | |
|---------------|----------|----------|----------|----------|----------|----------|----------|
| Task Priority | | | | | | | |
| | Elements |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

Element

The final breakdown of a job is the “Element”.

While duties and tasks give an overview of the job, the elements provide finer details. The element is the lowest level to which we would want to break the job down. It is the smallest meaningful unit of work, usually an individual step, action or activity in the work process.

One element of the task, ‘Change Tires’, is ‘Secure Car on Hoist’. It is the first step in a series of steps that complete the task, ‘Change Tires.’

Elements are usually listed in the order they’re done.

- What are some other elements required for ‘Change Tires’? List the elements in the order that they are done. Record the answers in the space provided on the worksheet on page 22. Possible answers in the Answer Key in the Appendix.

Identify Tasks Likely to Present Hazards

After determining the duties, tasks, and elements of a job, the next step involves identifying the tasks likely to present hazards.

Consider the following criteria when determining hazardous tasks:

- Tasks with known or obvious hazards
- Tasks which have potential for serious injuries
- Tasks with high accident or injury frequency
- New tasks/changed with no accident history
- Tasks using new/unsafe equipment
- Unusual tasks and tasks that are performed infrequently
- Tasks which are repetitive, routine, or low hazard

To do an effective evaluation of each task, it is wise to have a variety of staff members involved in the process.

Who do you think should be involved?

The team should consist of:

- Experienced employees – Provide knowledge and experience
- Less experienced employees – Offer the insight of an average worker performing the task
- Very inexperienced employees – Ask questions and identify concerns of a new worker on the job
- Management Personnel/Supervisors – Have the knowledge of existing company policies and the authority to change or recommend changes to them

The next exercise requires you to prioritize the tasks we have identified for the Auto Service Technician. We'll try to determine tasks that are more hazardous than the others.

Which of the tasks do you think are most hazardous and the least hazardous? Write the numbers 1 to 6 beside the list you have created from before, with No 1 being the most hazardous.

Perform Spring/Fall Service
Perform tune-up
Maintain inventory
Service brakes
Change tires
Change oil

Suggested answers are in Appendix 1.

Review the examples of Job, Duty, Task, and Elements and write the numbers in the Task priority spots on your work sheet.

Exercise 1: Breaking down your Job

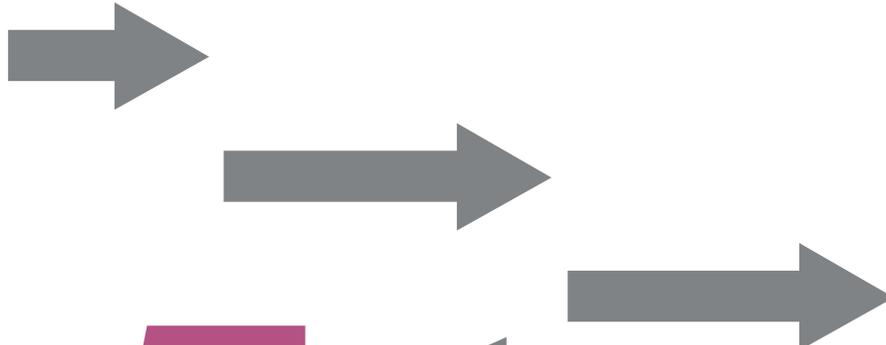
Try breaking your job down to the element level. Start with your job, then duty, then task and finally “elements”. You may want to write your answers on a Job Hierarchy and component Worksheet.

Job Hierarchy and Component Worksheet

Date: _____ Job: _____

Duty: _____

| Task | | | | | | | |
|---------------|----------|----------|----------|----------|----------|----------|----------|
| Task Priority | | | | | | | |
| | Elements |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | 10 | 10 | 10 | 10 | 10 | 10 | 10 |



5 steps
to risk
assessment

**CASE
STUDIES** 

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Following the examples given in this material is not compulsory and you are free to take other actions.

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Case study: Risk assessment for a masonry contractor

Case study: Risk assessment for a landscape company

References

WorkSafeBC publications:

Safety Inspections Reference Guide and Workbook

How to Implement a Formal Occupational Health and Safety Program

Monthly Auto Lift Inspection Checklist

Construction Compliance - Field Officer Guide

Introduction

Whether you are an employer, or self-employed, a risk assessment of your work activities must be conducted. This is nothing more than a careful examination of what work activities could cause harm to people, so that you can determine whether you have taken enough precautions or should do more to prevent harm.

To help you carry out your assessment, WorkSafeBC has also embedded the booklet “5 Steps to Risk Assessment” into this workbook which gives practical information on how to assess risk and record the findings; it was aimed particularly at small business.

To support the 5 Steps Booklet and illustrate what it involves in practice, WorkSafeBC has adopted a series of risk assessment case studies from the HSE of typical employers in small business for use in this workbook.

The point of the case studies is to illustrate the way the businesses went about their assessments and how and why they reached their decisions. Whatever business you are in, this workbook is designed to assist you in carrying out your own risk assessment.

If you are involved in the same activities as those covered in the case studies, you will find much of the detail directly relevant to you. However, beware! You should not simply read across to your own businesses – this material does not provide you with a short cut to your own assessment.

All businesses have their unique features and a particular case study may cover some hazards you do not have to deal with in your own workplace, and not mention some you do – you will have to take your own 5 steps when carrying out your own risk assessment.

Even where the hazards are the same, the control measures you adopt may have to be different from those in the case studies so as to meet the particular conditions in your workplace.

Though the case studies each deal with very different activities, you will see that there is a common approach involving the following stages.

Stage 1: Preparation

Don't jump in feet first! Take time to prepare.

The 5 step method will present you with a systematic approach and make clear what sort of information you are going to have to collect and what decisions you will have to make to complete the assessment.

You will find it a great help to access and read health and safety publications which cover your work activities and give a guide to the hazards that are likely to be in your type of workplace, and what you have to do to control the risks from them.

WorkSafeBC produces a vast range of publications which may help you with your risk assessment: you will see references to some of these in the case studies. Other organizations such as industry specific and safety associations and trade organizations also produce health and safety information.

The suppliers of equipment, chemicals etc should also supply you with health and safety information about their products – they have a legal obligation to do so.

But remember, nobody knows your business better than you and the people who work for and with you – make sure you use your knowledge and experience and theirs, in carrying out the risk assessment. See what past accident investigation reports and first aid records at your workplace have indicated as source of accidents and injuries.

Stage 2: Touring the workplace

Risk assessment is not meant to be a theoretical exercise. Tour the workplace to confirm, amend and add detail to your preliminary list – what's actually there on the shop floor. You may want to do this by systematically going from work area to work area, identifying the hazards associated with equipment and activities in each area; another approach is to shadow workers to see what hazards they meet while going about their work.

Make sure you talk to the workers, tap their experience, and listen to their concerns. The workers' safety rep., if there is one at your workplace, will have a particularly valuable contribution to make.

Stage 3: Completing the risk assessment

With all this information, you can now sit down and complete your assessment using the form provided with the 5 steps booklet or one that you have designed for this purpose. You will have to decide, for each hazard identified, whether you have done enough to control the risk from each of them or whether you need to do more and, if so, what.

You should always consider first whether you can eliminate the hazard altogether or replace it with something safer (e.g. water-based paints are usually a lesser hazard than solvent-based paints). Then, consider whether the control measures you have already taken are enough, or are more needed? In the vast majority of cases, it will be relatively straightforward for you to decide – compare the controls you have in place with the good practice identified in the published guidance you read at stage 1.

If you cannot find material covering a particular hazard in your workplace and/or you are uncertain what to do, have a word with your local WorkSafeBC Officer. Your business or trade association or other firms in your line of business may also be able (and willing) to help you out.

Make sure you pass on the significant findings of your risk assessment to your employees or coworkers. Finally, remember that the risk assessment is a ‘means’ and not an ‘end’. If your assessment showed that you had more to do to control risk then do it!



- Preparation
- Tour of the office
- Completing the risk assessment

Setting the scene

The company employs 18 office staff in a two-storey building consisting of seven offices, a meeting room and a store room containing the photocopier, two washrooms, and a small kitchen area containing a small fridge. All offices are equipped with typical office furniture including computers and monitors at workstations, filing cabinets, etc.

The office activities include purchasing, sales, financial control and secretarial back-up. All staff accesses a networked computer system that supports and monitors these activities. Customers are not normally allowed to enter the building, and access by 'others' (sales personnel and contractors, e.g. window cleaners) is strictly controlled.

The office manager carried out the risk assessment. Although he had a good understanding of general office procedures, (developed over many years of office work), his knowledge of health and safety matters was not very comprehensive. It focused on specific issues, for example the importance of emergency procedures. He therefore took some care in preparing for the assessment.

Preparation

The manager began by reading the 5 Steps booklet, which explained the risk assessment procedure. He then read through the WorkSafeBC workbook *Safety Inspections Reference Guide and Workbook* and the more general *How to Implement a Formal Occupational Health and Safety Program* which enabled him to develop a preliminary checklist, outlining the main hazards and the associated issues he would have to consider further. This was his list:

| Hazard | Issues to consider |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Manual handling | Heavy loads, lifting equipment, training |
| Computer monitors | Level of use, comfort of staff, training. |
| Electrical equipment | Visual checks, routine maintenance |
| Fire | Means of escape, fire alarm and fire-fighting, housekeeping, storage, smoking |
| Hazardous substances | Can use of existing chemicals be eliminated or safer substitutes used? Also consider data sheets, procedures for use. |
| Others | Washrooms, temperature, welfare. |

The manager also made another initial list identifying the people who might be affected by hazards in the office. He found that the checklist under ‘Who might be harmed?’ in the 5 Steps Booklet proved useful for this stage of the process.

His list was:

- Firm’s own employees: office workers, office cleaner.
- Others: delivery people, sales personnel, contractors.
- Members of the public: not normally allowed into the building.

Tour of the office

Having completed his preparation, the manager continued the risk assessment by making a tour of the office. He did this so that he would be able to identify where and how hazards arose in practice in the workplace and how harm could actually occur. He:

- made sure all areas and activities were covered;
- used the preliminary assessment checklist as a prompt;

- talked to supervisors and staff to learn from their more detailed knowledge of areas and activities, and to find out their concerns and opinions about health and safety issues in their workplace;
- reviewed past accident/incident reports and first aid records; and
- Recorded what controls, if any, were in place to manage these hazards.

During the tour, the manager identified the particular examples in his workplace of the hazards on his preliminary checklist, and added some not on the list. For example, the falling of items stored on a high shelf; and talking to a supervisor revealed that staff were bringing their own electric kettles into work.

Completing the risk assessment

The manager used the information gathered during the tour to record the particular hazards he had identified, the people at risk from those hazards and the existing control measures.

He then considered the advice provided in the 5 steps to risk assessment. He referenced two WorkSafeBC publications, *Safety Inspections Reference Guide and Workbook* and *How to Implement a Formal Occupational Health and Safety Program*, and he consulted with his supervisors to complete the assessment. For each hazard identified, he had to judge whether the control measures currently in place were sufficient or, if more were needed, what should be done. He wrote down any additional control measures required. The manager’s record of the assessment is shown on page 36.

Costs and time taken

The time taken by the manager in consultation with the supervisors to perform the risk assessment was:

- | | |
|---------------------------------------------------|------------------|
| • Preparation (obtain and read documentation) | 2 person hrs |
| • Gathering information | 3 person hrs |
| • Recording & considering further controls | 2 person hrs |
| • 5 steps to risk assessment | free publication |
| • Safety Inspections Reference Guide and Workbook | free publication |
| • How to Implement a Formal OH&S Program | free publication |

Copies of the assessment were then given to all staff members by their supervisors with whom they discussed the findings. The assessment was also used as a basis for orientation training of new staff. The manager decided that a review and update should be made annually or at any time when major changes in the workplace occurred.

Instructions for Exercise 2:

Review the following tables for Case Study 1. The purpose of the review is to familiarize yourself with the format so that you will be able to complete one or more of the remaining 4 case studies.

Following the review of Case Study 1 try working through the other case studies without looking at the answers.

Case study 1 – Risk Assessment for an Office

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Manual handling</p> <p>Deliveries: Paper (regular) Office equipment (infrequently)</p> | <p>All staff- paper</p> <p>Named staff – office equipment and other heavy loads.</p> <p>Staff of contract paper suppliers</p> | <p>Wheeled carts used to transport boxes of paper etc.</p> <p>Only named staff moves computers and other heavy loads.</p> <p>Top shelves used for storage of light boxes only.</p> | <p>Avoid risk of injury by removing need for manual handling or provide mechanical aids.</p> <p>If risk cannot be avoided a more detailed assessment, as required by Manual Handling Regulations, is needed</p> | <p>Need for manual handling training of named staff to be kept under review.</p> <p>Supervisors to remind staff that heavy equipment to be moved by named staff only.</p> <p>Agree, by contract with suppliers of paper for delivery to point of store</p> |
| <p>Computer monitors</p> <p>Work station & surrounding area</p> | <p>All office staff use equipment intermittently no habitual users.</p> | <p>Adjustable monitors and foot rest.</p> <p>Free eye test if requested</p> <p>Venetian blinds provided to control ambient light.</p> <p>(One staff member complained of slight discomfort. Did not know how to correctly adjust equipment.)</p> | <p>Suitable lighting, comfortable adjustable seating.</p> <p>For habitual users, more detailed assessment of work stations is required.</p> <p>How to Make your Computer Workstation fit you</p> | <p>Supervisors to ensure that staff know how to adjust equipment for own comfort.</p> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|--------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Electrical</p> <p>Office equipment portable heaters, tea/coffee making equipment fridge.</p> | All staff | <p>Sufficient sockets provided</p> <p>Staff trained to report defective plugs or cables to manager.</p> <p>Photocopiers and computer systems maintained on contract.</p> <p>(Staff bringing in own kettles.)</p> | <p>Equipment must be used and maintained to prevent danger.</p> <p>E.g. visual checks by users; periodic formal visual inspection.</p> <p>More detailed inspection and testing of equipment liable to damage. Avoid overloaded sockets.</p> | <p>Fire extinguishers inspection to be put out to contract urgently.</p> <p>The office manager to make regular inspections to ensure that firm rules are followed and housekeeping standards are maintained.</p> <p>Training on use of extinguishers to be organized</p> |
| <p>Fire</p> | All staff and visitors. | <p>Fire evacuation procedures displayed at each fire alarm point</p> <p>Fire drills twice yearly.</p> <p>Exits & fire exits clearly marked.</p> <p>Access to exits & extinguishers to be kept clear at all times.</p> <p>Fire alarms maintained & tested by mfg.</p> <p>Waste bins emptied daily by cleaners</p> | <p>Escape routes, fire alarms & fire-fighting equipment should be managed and staff trained.</p> <p>Minimize opportunities for fire to occur.</p> | <p>Arrangements to be made for periodic formal visual inspection.</p> <p>Periodic inspection and testing of portable heaters.</p> <p>Staff instructed not to bring in their own kettles, as maintenance cannot be assured.</p> <p>Water heater and coffee machine to be provided.</p> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|---------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Slips, trips and falls | All staff and visitors | <p>Reasonable house-keeping standards maintained.</p> <p>Cabinet drawers & doors kept closed when not in use. Trailing cables from electrical machinery managed.</p> <p>Floors, staircases & doors cleaned on a regular basis by the cleaners.</p> <p>Repairs & maintenance carried out when necessary.</p> <p>Stairs well lit & handrail provided.</p> <p>Entrance well lit.</p> | Condition & type of flooring, amount of lighting & standard of housekeeping should be such to prevent injury. | <p>Housekeeping to be discussed at regular staff meetings.</p> <p>Supervisors given the responsibility of maintaining standards in their areas.</p> <p>Office manager will carry out occasional inspections to ensure adequate standards are maintained.</p> |
| Bleach & strong detergents | Cleaner | None. | Exposure to hazardous substances minimized as required by WHMIS | <p>Cleaner to try safer alternative to bleach</p> <p>Follow MSDS</p> <p>What to do in case of a spill.</p> <p>Protective rubber gloves to be provided.</p> |
| Photocopier | All staff | Photocopier located in well-ventilated storeroom. | WHMIS applies. | No further action |
| Smoking | Employees | <p>“No smoking”</p> <p>Smokers to go outside and away from doors and windows for a cigarette.</p> | | No further action required. |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|--------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Hygiene & welfare | All staff | Washrooms supplied with potable hot and cold water and soap/ towels Kitchen area provided with drinking water and a fridge and cleaned daily. | Adequate sanitary washing facilities, drinking water, rest facilities and a place to dry, change and store clothes must be supplied. | No further action required. |
| Environmental comfort factors | All staff | Building kept reasonably warm and light, windows open to provide fresh air, plenty of space in offices. | Adequate heating lighting & ventilation & space required | No further action required. |
| Falling objects Items stored in high places | All staff and others | Light materials stored on the upper shelves. Step-ladders used to access upper shelves in storage areas | Always provide well maintained steps (or stool) for access to upper shelves. | Supervisor to make occasional checks of the ladders and record findings. |

Instructions for Exercise 3:

Complete the tables based on one of the case studies that follows.

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|--------|----------------------|-------------------|--------------------|----------------|
|--------|----------------------|-------------------|--------------------|----------------|

To help facilitate this exercise, the hazards have been identified in each case study; you should focus on completing the remainder of the tables. To assist you in your learning, the completed tables for each of the case studies are in Appendix 2. *The answers to who might be harmed, existing controls, standards to be met and future actions are italicised.*

Setting the scene

The risk assessment was carried out on the auto repair and maintenance activities of an auto body shop. Twenty mechanics are employed on these activities, including two apprentices. Eight of the mechanics work in the body shop which contains body repairs and spray/bake facilities. The mechanics all are journeyman. A further two employees work in the stores.

Access of non-employees is carefully controlled. Customers report to reception and do not normally enter the shop areas. Suppliers are escorted when visiting the stores, while other personnel, including insurance inspectors and maintenance engineers, are the direct responsibility of the relevant supervisor.

The risk assessment was undertaken by the shop manager. He was familiar with the various work areas but not with the detailed work practices and their associated hazards. He realized that some care would be needed in carrying out the assessment.

Preparation

The manager began by reading the 5 steps booklet which explained the risk assessment procedure. He then read through the *How to Implement a Formal Occupational Health and Safety Program* and *Monthly Auto Lift Inspection Checklist*. The manager was particularly concerned with the safe storage and disposal of various waste materials on site, so he went over the arrangements with the licensed disposal contractor on the telephone. He also asked the supervisor of the paint spray facility to provide him with the manufacturer's manual of recommended procedures, as he was aware that this facility presented a number of hazards.

He was now in a position to make a preliminary checklist of the main hazards and the associated issues which he would need to consider further.

This was his list:

| Hazard | Issues to consider |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazardous substances used and arising from work activity | Can use of existing chemicals be eliminated or safer substitutes used? Data sheets, procedures for use and storage, personal protective equipment, training, disposal. Exhaust fumes, asbestos arising from work activity. |
| Fire | Means of escape, fire alarm and fire-fighting, use and storage of flammable gas cylinders, flammable liquids, housekeeping, smoking. |
| Electrical | Visual checks, routine maintenance. |
| Mechanical | Guarding, failure of equipment; inspection and maintenance, training |
| Manual handling | Heavy loads, lifting equipment, training. |
| Noise | Assess noise level, improve machinery, isolate noisy activities, and use hearing protection |
| Welding | Protective equipment, adequate ventilation |
| Slips, trips and falls | Cleaning, housekeeping, defined work areas, dealing with spillages. |
| Compressed air | Regular inspections, avoid injections into body. |
| Others | Waste disposal, hand tools, welfare. |

The manager also made another initial list identifying the people who might be affected by hazards in the garage. He found the checklist under ‘Who might be harmed?’ in the 5 steps booklet useful for this stage of the process. His list was:

- Mechanics, parts staff, and office staff
- Customers dropping or picking up cars, suppliers, sales people etc

Members of the public were not allowed in the area

Tour of the auto shop

Having completed his preparation, the manager made a tour of the shop with a supervisor. During the tour he:

- made sure all areas and activities were covered;
- used the preliminary checklist to help identify where and how in practice particular examples of the hazards arose in the workplace and how harm could occur;
- talked to staff to find out what work methods were in use and what training they had been given;
- reading the accident/incident reports and first aid records; and
- recorded the hazards identified and what controls, if any, were in place to manage them.

Completing the risk assessment

The manager used the information gathered during the tour to record the particular hazards he had identified, the people at risk from those hazards and the existing control measures. After discussing each hazard with the supervisor and considering the guidance in the WorkSafeBC publications, he was able to decide whether their present controls were adequate and what, if any, additional controls were required. This information was then also recorded.

The manager's record of the assessment is shown on the table on the next page.

The assessment was discussed by the supervisors and their teams of mechanics. The manager decided that a review and update was to be made annually or at any time when major changes in the workplace occurred. He also agreed to the supervisor's suggestion that the assessment should be used as the basis for orientation training of new staff.

Costs and time taken

The time taken by the manager in consultation with the supervisors to perform the risk assessment was:

- | | |
|-----------------------------------------------|------------------|
| • Preparation (obtain and read documentation) | 4 person hrs |
| • Gathering information | 6 person hrs |
| • Recording & considering further controls | 3 person hrs |
| • 5 steps to risk assessment | free publication |
| • Monthly Auto Lift Inspection Checklist | free publication |
| • How to Implement a Formal OH&S Program | free publication |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Hazardous Substances</p> <p>(i) Isocyanate paints;</p> <ul style="list-style-type: none"> • petroleum based paints; • thinners used in spray booth; <p>(ii) Handling of fillers, dust from grinding of fillers.</p> <p>(iii) Cleaning solvents, engine oil.</p> <p>(iv) Car engine running inside, toxic exhaust fumes e.g. carbon monoxide</p> <p>(v) brake & clutch linings & discs (may contain asbestos).</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Fire</p> <p>(i) Sparks & dust from grinding;</p> <ul style="list-style-type: none"> • petroleum based paints; <p>(ii) Use of flammable substances;</p> <p>(iii) Gasoline fires</p> <p>(iv) Charging batteries; build-up hydrogen, explosion.</p> | | | | |
| <p>Electrical equipment</p> <p>Fixed equipment; range of portable appliances e.g. hand held lamps.</p> | | | | |
| <p>Falling objects</p> <p>Car hoist failure.</p> <p>Car jack failure.</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| Mechanical equipment E.g. grinding equipment. | | | | |
| Operation of forklift | | | | |
| Manual handling In the stores; movement of components. | | | | |
| Noise Particularly in body repair work | | | | |
| Welding Toxic fumes, sparks, arc flash. | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|--------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| Slips, trips & falls at grade | | | | |
| Compressed air (i) Explosion of equipment, tires, (ii) Injection of air in the body | | | | |
| Waste Disposal | | | | |
| Hand tools | | | | |
| Hygiene & comfort | | | | |

Setting the scene

The assessment was carried out in a warehouse which is used for the receiving, storage and shipping of cardboard and plastic packaging materials. Twelve staff are employed over two shifts, including the manager and assistant manager. The company also employs a full-time cleaner who has a broad range of cleaning and housekeeping duties.

A small office used for shipping and receiving by the manager and his assistant manager, and a staff lunch room is located inside the warehouse between two roller-shutter delivery doors. The remainder of the building is filled with heavy duty metal racking upon which the palletized goods are stored. Washroom facilities are provided in an adjacent building.

Most movements of goods involve lift trucks but some manual handling is required when non-palletized goods are handled and when packaging is damaged. All pallets leaving the warehouse are shrink-wrapped.

The warehouse manager did the assessment of the warehouse and delivery area following the advice of an Occupational Safety Officer who had visited to inspect the warehouse some weeks before. The manager had a general understanding of the majority of work procedures and their associated hazards (through experience rather than training). He was particularly aware of the need for fire precautions as his insurance company had insisted on the highest standards for fire management.

Preparation

The warehouse manager based his risk assessment on the 5 steps booklet. He began by reading this workbook and then went through the WorkSafeBC publication *How to Implement a Formal Occupational Health and Safety Program*. Using information in these publications he was able to construct a preliminary assessment checklist which identified the main hazards he was likely to find in the warehouse and the associated issues he would have to consider further.

This was his checklist:

| Hazard | Issues to consider |
|-------------------------------------------|---------------------------------------------------------------------------------------------|
| Fire | Means of escape, fire alarm and firefighting, housekeeping, no smoking, fire certification. |
| Operation of fork lift and other machines | Maintenance, training. |
| Traffic movements (internal and external) | Segregation of pedestrians, well-maintained and cleaned floors. |
| Manual handling | Avoid where possible, mechanize, training. |
| Electricity | Visual checks, routine maintenance. |
| Fall of objects | Adequate racking, regular inspections, handling of pallets. |
| Others | Noise, lighting, slips, trips and falls, cleaning agents. |

The manager then thought about who might be harmed by the hazards in the warehouse, this included not only:

- his own employees; but also
- others including delivery drivers, sales representatives and contractors.

The list provided in the 5 Steps helped him to identify particular groups.

Tour of the warehouse

The warehouse manager next made a systematic tour of the four main work areas - the shipping and receiving, the main storage area, the office and lunch rooms and the outside area where traffic movements and parking took place. He was accompanied by his assistant manager who also had many years of practical experience of warehouse work. He did this so that he would be able to identify where and how hazards arose in practice in the workplace and how harm could actually occur. He:

- made sure all areas and activities were covered;
- used the preliminary checklist as a prompt;
- talked to his colleagues to learn from their more detailed knowledge of particular jobs and areas;
- looked at the first aid records to gather information on current problems: and
- recorded what controls, if any, were in place to manage the hazards identified.

During the tour, the manager was able to add a hazard not on his preliminary list, i.e. hazardous substances such as the fumes from the fork-lift truck and from recharging their batteries. He also discounted a hazard, i.e. noise was considered as a potential hazard but was not included in the assessment as the level of risk was judged as insignificant.

Completing the risk assessment

The manager and his assistant used the information gathered during the tour to record the particular hazards they had identified, the people at risk from those hazards and the existing control measures. They then discussed each hazard identified to decide whether present control measures were adequate, checking back against the WorkSafeBC publications where necessary. The additional controls that they agreed to introduce were recorded.

Their record of the assessment is shown on the table on the next page.

The manager gave copies of the assessment to all staff members and the findings were discussed at the next staff meeting. He decided that a review and update was to be made annually or at any time when major changes to the workplace occurred.

Costs and time taken

- | | |
|---------------------------------------------------|------------------|
| • Preparation (obtain and read documentation) | 3 person hrs |
| • Gathering information | 3 person hrs |
| • Recording & considering further controls | 2 person hrs |
| • 5 steps to risk assessment | free publication |
| • Safety Inspections Reference Guide and Workbook | free publication |
| • How to Implement a Formal OH&S Program | on the web |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Fire Bulk storage of easily burned materials.</p> <p>Ignited through electrical fault, smoking materials, battery recharging etc.</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|---------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Operation of Forklifts</p> | | | | |
| <p>Machinery Shrink wrap machine.</p> <p>Conveyor belt for unloading trucks.</p> | | | | |
| <p>Traffic movements (inside & outside)</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Manual handling Regular movement of cartons to pallets.</p> <p>Rolls of stretch wrap, and flat pallets.</p> | | | | |
| <p>Portable electrical equipment Including conveyor & wrapper, industrial cleaner, kettle, fridge, heater in lunch room.</p> | | | | |
| <p>Falling objects From racking & during movement.</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Slips, trips & falls</p> | | | | |
| <p>Hazardous substances Vehicle exhaust fumes.</p> <p>Bleach & cleaning fluids</p> <p>Recharging of forklift batteries – potential explosion by release of hydrogen, spill of acid</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|---------------------|----------------------|-------------------|--------------------|----------------|
| Lighting | | | | |
| Hygiene/ Comfort | | | | |

Setting the scene

A two storey block of 16 apt is being built on a small lot off a quiet road. Overall control of health and safety is in the hands of the general contractor who also has responsibility for site security, all traffic movements on site and for determining, in consultation with sub-contractors, the locations for delivery and storage of materials.

The general contractor gave prospective sub-contractors for the glass block contract relevant information from the proposed health and safety plan. This included details of the physical conditions on site and advised interested bidders that the principal contractor would make arrangements for:

- providing scaffolding on-site;
- accepting deliveries of palletized glass blocks and ready mixed mortar;
- lifting the glass blocks onto the loading platforms using a fork-lift with trained drivers;
- and ensuring the mortar is moved to the work areas by a forklift.

This allowed the bricklayers to plan for safety and included the cost of the necessary protective measures in their bids. The principal contractor requested that outline method statements be submitted with the tenders, and used these to assess the competence of the masonry firms.

Visiting the site

The manager of the successful bricklaying firm visited the site before beginning work. He examined the work area, access, and surrounding environment as well as other site activities.

Preparation

With this information, and his outline method statement, the manager was able to prepare a detailed risk assessment. He followed the general approach adopted in the 5 steps booklet but modified the steps slightly since the assessment was carried out before work began.

The manager began by referring to two WorkSafeBC publications, *Construction Compliance - Field Officer Guide* and *How to Implement a Formal Occupational Health and Safety Program*. These publications provided extensive information on the probable site hazards and standard safe working procedures. They also confirmed the approach he had outlined in the method statement for dealing with a number of safety-related issues.

He worked his way systematically through the sections of the outline method statement and, with the aid of WorkSafeBC's publications, identified the significant hazards at each stage of the job. Having visited the site he was aware of the location and of any special features needing to be taken into account.

He then considered who might be harmed by the hazards identified. His earlier discussions with the main contractor were very important here as he had to consider the safety of:

- other sub-contractors' employees, delivery drivers;
- site visitors, members of the public; and
- his own workforce.

The manager then outlined what controls he planned to adopt. The information provided in WorkSafeBC's publications was very helpful in addition to his own knowledge and that of the supervisor.

Completing the risk assessment

The manager recorded the particular hazards he had identified, the people at risk from those hazards and the control measures he proposed to adopt. This risk assessment enabled the manager to turn the outline method statement into a detailed statement.

The manager's record of the assessment is shown on the table on the next page.

The manager gave copies of the assessment to the main contractor. They were also issued to all members of the bricklaying team by their supervisor. He made sure they were fully aware of all the workplace hazards and the controls to reduce the risk. Once the work had begun, the assessment was reviewed by the manager to take into account any change of circumstances encountered on-site.

Costs and time taken

The time taken by the manager in consultation with the supervisors to perform the risk assessment was:

- | | |
|-------------------------------------------------|------------------|
| • Preparation (obtain and read documentation) | 3 person hrs |
| • Gathering information | 1 person hrs |
| • Recording & considering further controls | 3 person hrs |
| • 5 steps to risk assessment | free publication |
| • How to Implement a Formal OH&S Program | on the web |
| • Construction Compliance – Field Officer Guide | on the web |

| Hazard | Who might be harmed? | Existing controls | Standard to be met |
|--------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|
| Fall from a height | | | |
| Falling Objects | | | |
| Slips, trips & falls Around the site | | | |
| Manual handling Glass blocks, mortar, equipment movement up & down ladders & scaffolding. | | | |
| Hazard to eyes Cutting, drilling & grinding. | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met |
|-----------------------------------------------------------------------|-----------------------------|--------------------------|---------------------------|
| Mechanical equipment Cement mixer angle grinder. | | | |
| Noise From use of equipment e.g. angle grinder. | | | |
| Hand tools | | | |
| Fire/explosion From ignition of fuel or trash | | | |
| Hazardous substance Mortar Dust from angle grinding. | | | |
| Hygiene/comfort | | | |

Setting the scene

The company is an established family business of landscape gardeners who prepare ground and maintain grass, plants, shrubs and trees for commercial clients. This includes, for example, laying turf and planting shrubs surrounding newly-built dwellings and maintaining the grass and grounds surrounding business premises.

The company is managed by two supervisors and employs 25 full-time staff. The premises consist of an office and a secured compound used to store the landscaping and gardening equipment including chemicals such as herbicides.

Since the work takes place in a variety of locations, it was necessary for the company director to devise a generic assessment of the risks posed by the equipment and substances used in the landscaping tasks.

Preparation

The assessment was carried out by one of the supervisors who followed the protocol detailed in the 5 steps booklet. He had collected a range of documents to assist in this process. These included:

- company accident/incident reports and first aid records;
- WorkSafeBC publication *How to Implement a Formal Occupational Health and Safety Program*;
- Operational and maintenance manuals from machinery manufacturers; and
- data sheets on safe use of pesticides etc from chemical suppliers.

The supervisor used the information in these documents to make a preliminary checklist outlining the main hazards he would be likely to find and the associated issues he would have to consider further.

This was his list:

| Hazard | Issues to consider |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Contact with buried services | Discuss with utilities, locate accurately. |
| Mechanical | Guarding, inspection & maintenance, training, personal protective equipment. |
| Manual handling | Heavy loads, lifting equipment, training. |
| Job design | Repetitive task, frequency. |
| Hazardous substances | Are existing chemicals necessary? Procedures for use, personal protective equipment, training. |
| Storage and transport of fuel | Small amounts, correct containers, safe work procedures assess noise level, improve machinery, and isolate noisy activities. |
| Noise | Provide hearing protection. |
| Other | Transport, welfare, comfort. |

The supervisor also made a preliminary list identifying the people who might be affected by hazards, as follows:

- employees; and
- members of the public

Visiting locations

Having completed his preparation, the supervisor continued the assessment by visiting a number of contract locations. He did this so that he would be able to identify where and how hazards arose in practice in the workplaces and how accidents could actually occur. He:

- made sure he saw a representative range of different work activities;
- used the preliminary checklist to identify how and where hazards arose and the sort of accidents that could occur and how severe it would be for those harmed;
- talked to employees to identify what they thought were the significant hazards;
- recorded evidence of the working practice in use to control the hazards.

Completing the risk assessment

The supervisor used the information collected during the site visits to record the particular hazards he had identified, the people at risk from those hazards and the existing control measures.

By using the manufacturer’s manuals and the other trade information he then judged whether the existing control measures for each hazard were adequate. He identified additional control measures for some of the hazards and noted which could be introduced now at minimal cost and those for which there would be a significant expenditure. He wrote down any additional control measures required. The supervisor’s record of the assessment is shown on the table on the next page.

The supervisor made sure that copies of the assessment were given to all staff and he arranged a meeting to discuss the implications of any changes. As this was a generic assessment, staff were reminded that they might have to tailor the assessment to fit the actual conditions which would vary in practice from site to site. The supervisor decided that a review and update should be made annually or at any time when major changes to the work practices occurred.

Costs and time taken

| | |
|--------------------------------------------------------------------------|------------------|
| • Preparation (obtain and read documentation) | 3 person hrs |
| • Gathering information | 2 person hrs |
| • Visiting locations, conducting the assessment, & recording the results | 6 person hrs |
| • 5 steps to risk assessment | 3 person hrs |
| • Safety Inspections Reference Guide and Workbook | free publication |
| • How to Implement a Formal OH&S Program | on the web |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| <p>Contact with buried underground services E.g. cutting live electric cables.</p> | | | | |
| <p>Mechanical equipment Mowers, trimmers, shredders, chainsaw, hedge clippers, sprayers.</p> | | | | |
| <p>Falling objects and objects striking body While using the machinery & when working on construction sites.</p> | | | | |
| <p>Noise From machinery.</p> | | | | |
| <p>Hazardous substances Mixing & using spill during transport</p> <p>Pesticides (e.g. Round up, Dextrone, Checkmate Fertilizers)</p> | | | | |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|---------------------------------------------------------------------------------------------------------|----------------------|-------------------|--------------------|----------------|
| Storage & use of gasoline | | | | |
| Manual handling | | | | |
| Transport Trucks to machinery, chemicals, garden waste etc. Other contractors' vehicle | | | | |
| Welfare/ comfort | | | | |

Establishing Safe Work Procedures

When it has been determined that the hazards cannot be eliminated, safe work procedures must be created, starting with the most hazardous task.

Procedures are instructions on how to perform a task. Steps involved in establishing safe work procedures include:

- Identifying the hazards
- Gathering a team of very experienced, average and inexperienced workers and supervisors to develop the procedures, to provide the knowledge and skills, to do the work safely, and to identify the potential pitfalls
- Capturing all existing manufacturer's instructions and noting them down as safe procedures if machinery is used
- Having an average worker perform the task while everyone observes the actions
- As a group, reviewing reports of previous incidents and determining why the incidents happened
- Deciding, as a team, which procedures provide the safest method for accomplishing the task
- Having the average worker perform the task again, to ensure the newly developed procedures are safe
- Documenting the procedures

Written Procedures

Written procedures must then be implemented and workers must be trained in the practice of these procedures.

Exercise 4:

Instructions – Develop Safe Work Procedures

This is a two part exercise.

1. Develop written procedures for hazards that have been identified for “Auto Service Technician” using the Hazard Analysis Safe Work Procedures Worksheet on the next page. For part one of this exercise, suggested answers are on pages 68 and 69.
2. Develop written procedures for hazards you have identified for your own job using the Hazard Analysis Worksheet on pages 70 and 71.

Hazard Analysis Safe Work Procedures Worksheet

Date: November 1, 2012

Job: Auto Service Technician

Duty: Perform Spring/Fall Service

Task: Change Tires

| Elements | Hazards | Safe Work Procedures |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1. Secure car | 1. Car could shift while being worked on. | 1. 2. 3. |
| 2. Hoist car | 1. Tools and other items could fall from the hoist. 2. Hoist could inadvertently come down. | 1. 2. |
| 3. Remove wheel cover and lug nuts | 1. Could experience sprains and strains from over-reaching. 2. Wheel could fall off and hurt someone if not being held firmly in place while removing nuts. | 1. 2. |
| 4. Remove wheel | 1. Lifting tire could cause back/arm strains. | 1. |
| 5. Remove old tire (summer tire) from wheel | 1. Rapid deflation could cause dust to fly into eyes. 2. Could pinch fingers when taking tire off wheel. | 1. 2. 3. |
| 6. Install new tire (snow tire) on wheel | 1. Could pinch fingers when placing new tire on wheel. 2. Over-inflation could cause tire to explode. | 1. 2. |
| 7. Place wheel back on car | 1. Lifting tire could cause back/arm strains. | 1. |
| 8. Put lug nuts back on and tighten them | 1. Wheel could fall off and hurt someone if not being held firmly in place while tightening nuts. | 1. |
| 9. Lower car | 1. Tools could fall off hoist and hurt someone. 2. Car could shift if there's a sudden jerk when stopping. | 1. 2. |
| 10. Test drive | 1. Wheel could fall off if not attached properly. | 1. |

Possible Answers (safe work procedures):

- Car could shift while being worked on
 - Put gear shift in ‘park’
 - Apply emergency brakes
 - Shut engine off
- Tools and other items could fall from the hoist
 - Remove tools and other items on the hoist before operating it
- Hoist could inadvertently come down
 - Ensure controls are locked out
- Could experience sprains and strains from over- reaching
 - Place hoist at correct height to avoid over-reaching and twisting
- Wheel could fall off and hurt someone if not being held firmly in place while removing nuts
 - Maintain pressure on wheel while removing nuts
- Lifting tire could cause back/arm strains
 - Apply proper lifting procedures when handling tire
- Rapid deflation could cause dust to fly into eyes
 - Keep eyes away from valve when deflating tire and wear goggles
- Could pinch fingers when taking tire off wheel
 - Keep fingers out of pinch point when loosening deflated tire from wheel
- Could pinch fingers when placing new tire on wheel
 - Keep fingers out of pinch point when placing new tire on wheel

-
- Over inflation could cause tire to explode
 - Set air pressure to appropriate level and watch to ensure that it cuts off at the right point
 - Wheel could fall off and hurt someone if not being held firmly in place while tightening nuts
 - Maintain pressure on wheel until at least one nut is on by a few threads
 - Tools could fall off hoist and hurt someone
 - Remove tools and any other items on the hoist before operating it
 - Car could shift if there's a sudden jerk when stopping
 - Lower car slowly
 - Wheel could fall off if not attached properly
 - Start off by driving slowly, and then increase speed to ensure wheels have been attached securely

Hazard Analysis Safe Work Procedures Worksheet

| Elements | Hazards | Safe Work Procedures |
|----------|---------|----------------------|
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |

Hazard Analysis Safe Work Procedures Worksheet

Date: _____ Job: _____

Duty: _____ Task: _____

| Elements | Hazards | Safe Work Procedures |
|----------|---------|----------------------|
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |

Sample Hazard Analysis Safe Work Procedures Worksheet

Date: October 31, 2012

Job: Auto Service Technician

Duty: Perform Spring/Fall Service

Task: Change Tires

| Elements | Hazards | Safe Work Procedures |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Secure car | 1. Car could shift while being worked on. | 1. Put gear shift in 'park'. 2. Apply emergency brakes. 3. Shut engine off. |
| 2. Hoist car | 1. Tools and other items could fall from the hoist. 2. Hoist could inadvertently come down. | 1. Remove tools and items on the hoist before operating it. 2. Ensure safety dogs are engaged. |
| 3. Remove wheel cover and lug nuts | 1. Could experience sprains and strains from over-reaching. 2. Wheel could fall off and hurt someone if not being held firmly in place while removing nuts. | 1. Place hoist at correct height to avoid over-reaching. 2. Maintain pressure on wheel while removing nuts. |
| 4. Remove wheel | 1. Lifting tire could cause back/arm strains. | 1. Apply proper lifting procedures when handling wheel. |
| 5. Remove old tire (summer tire) from wheel | 1. Rapid deflation could cause dust to fly into eyes. 2. Could pinch fingers when taking tire off wheel. | 1. Keep eyes away from valve when deflating tire. 2. Wear goggles. 3. Keep fingers out of pinch point when loosening deflated tire from wheel. |
| 6. Install new tire (snow tire) on wheel | 1. Could pinch fingers when placing new tire on wheel. 2. Over-inflation could cause tire to explode. | 1. Keep fingers out of pinch point when placing new tire on wheel. 2. Set air pressure to appropriate level and watch to ensure that it cuts off at the right point. |
| 7. Place wheel back on car | 1. Lifting tire could cause back/arm strains. | 1. Apply proper lifting procedures when handling wheel. |
| 8. Put lug nuts back on and tighten them | 1. Wheel could fall off and hurt someone if not being held firmly in place while tightening nuts. | 1. Maintain pressure on wheel until at least one nut is on by a few threads. |
| 9. Lower car | 1. Tools could fall off hoist and hurt someone. 2. Car could shift if there's a sudden jerk when stopping. | 1. Always remove tools and any other items on the hoist before operating it. 2. Lower car slowly. |
| 10. Test drive | 1. Wheel could fall off if not attached properly. | 1. Start by driving slowly, and then increase speed to ensure wheels have been attached securely. |

Responsibilities of Employers, Supervisors, and Workers

Everyone in an organization has the responsibility to ensure a safe working environment. We will now take a look at the responsibilities of the key players with regard to safe work procedures.

Everyone in an organization has the responsibility to ensure a safe working environment. We will now take a look at the responsibilities of the key players with regard to safe work procedures.

In order to maintain a safe working environment, everyone must accept responsibility for his or her part in making it happen.

Each position has a safety responsibility associated with it.

What do you think the responsibilities are of the various staff members when it comes to safe work procedures? Record answers in the space provided below.

Suggested answers on the next page.

Suggested answers:

Employer

- Provide a safe working environment for every employee
- Develop and implement written safe work procedures
- Provide orientation and training for each employee
- Revise procedures that are ineffective

Supervisor

- Assist in designing and developing safe work procedures
- Ensure company safety policies are followed
- Oversee to ensure procedures are being followed
- Provide a safe working environment for every employee
- Develop and implement written safe work procedures
- Provide orientation and training for each employee
- Revise procedures that are ineffective
- Authorize changes in process, workplace design and/or equipment
- Suggest required changes to employer

Worker

- Assist in designing and developing safe work procedure
- Ensure that safe work procedures are followed as documented
- Apply safe practices at all times
- Report unsafe environments
- Watch out for the safety issue of others

Summary & Review

1. Review key steps in the Hazard Analysis Process:
 - Examine job components
 - Prioritize Tasks with Hazards
 - Assess Hazards and determine control measures
 - Develop Safe Work Procedures
2. Relate the material in this workbook to the safety of your job.
 - Are there current procedures in place for your own jobs?
 - Do the procedures identify the safest method for performing the tasks?

Notes

Appendices

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Appendix 1: Answer Key

What are some other benefits of having safe work procedures?

- Show safety commitment from employers
- Provide employers with ‘as is’ reference material in order to make changes to processes that are not adequate
- Provide a consistent and safe way to do a job
- Provide a training tool for workers
- Provide a reference source for questions and for determining causes of accidents

What do you think are some of the other additional tasks associated with Auto Service Technician’s duty of ‘performing Spring/Fall Service?’

- Change tires
- Check brakes and exhaust system
- Check lights and windshield washer/wiper
- Check cooling system and top up fluid
- Check electrical system
- Change oil
- Write a report

The suggested order is as follows:

1. Change tires
2. Check brakes and exhaust system
3. Check cooling system
4. Check electrical system
5. Change oil
6. Check lights and windshield washer/wiper
7. Write a report

What are some other elements required for ‘Change Tires’?

Possible answers (elements):

- Secure car on hoist
- Hoist car
- Remove wheel cover & lug nuts
- Remove wheel
- Remove summer tire from wheel
- Install snow tire on wheel
- Place wheel back on car (studs)
- Put lug nuts back and tighten
- Lower car
- Test drive

Appendix 2: Risk Assessment Tables

Case Study: Risk Assessment Table for an Auto Body Shop

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hazardous Substances</p> <p>(i) Isocyanate Paints;</p> <p>Petroleum based paints;</p> <p>thinners used in spray booth</p> | <p><i>Employees working in the spray booths.</i></p> | <p><i>Spray booths totally enclosed, general exhaust extraction in operation during spraying and baking.</i></p> <p><i>Spraying work only undertaken by trained staff. Air-fed respirator, disposable overalls. Gloves & safety boots worn at all times.</i></p> <p><i>Spray/bake booths maintained on regular basis by contract.</i></p> | <p><i>Exposure to hazardous substances minimized as required by WHMIS.</i></p> <p><i>Firstly, prevent exposure by not using substance or using safer substitute;</i></p> <p><i>Otherwise adequately control exposure.</i></p> <p><i>Health surveillance may be necessary.</i></p> <p><i>Effectiveness of control measures should be monitored, and equipment maintained.</i></p> <p>WHMIS</p> | <p><i>Supervisor to monitor the use of personal protective equipment by all body shop workers. Manager to introduce system to record issue and inspection of personal protective equipment.</i></p> |
| <p>(ii) Handling of fillers, dust from grinding of fillers.</p> | <p><i>Employees Storing & mixing paints</i></p> <p><i>Employees, particularly auto body mechanics.</i></p> | <p><i>Paints stored in separate room with extraction system. Proprietary mixing system used.</i></p> <p><i>Inventory kept. Colour-coded metal drum used for waste.</i></p> <p><i>Health surveillance carried out on body shop staff.</i></p> <p><i>Gloves worn when handling fillers. During grinding, local exhaust used</i></p> <p><i>Full face mask & cartridge, gloves & overalls used.</i></p> | <p>WHMIS applies.</p> | <p><i>As above.</i></p> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|--------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| (iii) Cleaning solvents, engine oil. | <i>All employees.</i> | <i>Kept in small amounts. Disposed of in colour-coded drums. Gloves & overalls used.</i> | <i>WHMIS applies.</i> | <i>As above.</i> |
| (iv) Car engine running inside, toxic exhaust fumes e.g. carbon monoxide | <i>All employees</i> | <i>Car exhaust attached to extractor system when engine is running. Extractor system maintained & tested to prevent leaks.</i> | <i>WHMIS applies.</i> | <i>Supervisor to periodically check carbon monoxide levels in the workshop when engine running & extraction system operating</i> |
| (v) brake & clutch linings & discs (may contain asbestos). | <i>All employees, particularly those involved in the task.</i> | <i>Proprietary drum cleaning equipment used. Dust removed with special vacuum cleaner. Overalls & respirator worn. Overalls cleaned by designated contractor & not taken home</i> | <i>Exposure to asbestos must be minimized</i> | <i>No further action required.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|-------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Fire (i) Sparks & dust from grinding; Welding; | <i>All employees, visitors.</i> | <i>Smoking prohibited in all work areas.</i> <i>Fire alarms maintained & tested by mfg.</i> <i>Extinguishers provided & inspected under contract.</i> <i>Special fire exits not needed as all work areas have immediate access to outside.</i> | <i>Escape routes & fire-fighting equipment should be managed.</i> <i>Staff should be trained in fire drill, fire-fighting & good housekeeping.</i> <i>Minimize opportunities for fire to occur.</i> | <i>Manager to arrange some training on use of extinguishers for all staff.</i> |
| (ii) Use of flammable substances; | <i>All employees, visitors.</i> | <i>Flammables purchased in min. quantities & stored in well ventilated locations. Flammable liquid waste stored away from main building. Good housekeeping standards.</i> | <i>Flammable substances should be stored separately in secure well-ventilated environments.</i> | <i>No further action required.</i> |
| (iii) Gasoline fires | <i>All employees, visitors</i> | <i>Fuel retriever used in emptying vehicle fuel tanks if necessary.</i> <i>Component cleaning in re-circulating paraffin system.</i> | <i>Minimize likelihood of gasoline spills</i> | <i>No further action required.</i> |
| (iv) Charging batteries; build-up hydrogen, explosion. | <i>All employees, others.</i> | <i>Operation carried out in a well-ventilated area so the hydrogen can disperse.</i> <i>Trained to follow mfg. recommendations.</i> | <i>Prevent build-up of explosive ATM.</i> | <i>No further action required.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <p>Electrical equipment</p> <p>Fixed equipment; range of portable appliances e.g. hand held lamps.</p> | <p><i>All employees, particularly from portable equipment which is liable to damage.</i></p> | <p><i>Testing carried out annually on all portable equipment & users trained to carry out visual checks & report defects. Installed equipment receives regular maintenance.</i></p> | <p><i>Equipment must be used & maintained to prevent danger.</i></p> | <p><i>No further action required.</i></p> |
| <p>Falling objects</p> <p>Car hoist failure.</p> <p>Car jack failure.</p> | <p><i>Employees, especially in vehicle repair.</i></p> | <p><i>Car lifts inspected & serviced every six months by insurers. Jacks & axle stands maintained on a regular basis.</i></p> <p><i>Axle stands used after lifting vehicle with jack. Safe working loads not exceeded.</i></p> | <p><i>Lifting equipment must be inspected every month by a competent person.</i></p> | <p><i>No further action required.</i></p> |
| <p>Mechanical equipment</p> <p>E.g. grinding equipment.</p> | <p><i>Employees.</i></p> | <p><i>All mechanical equipment checked before use & faults reported to supervisor. Equipment not to be left running unattended.</i></p> <p><i>Guarding provided. Protective equipment worn.</i></p> | <p><i>Dangerous parts of mechanical equipment must be provided with guards where practicable.</i></p> <p><i>The equipment must be adequately checked & maintained. It should only be used by those with suitable training.</i></p> | <p><i>No further action required.</i></p> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Operation of forklift | <i>Drivers. Other staff visitors</i> | <i>All operators trained for use of the forklift. Forklifts serviced regularly & examined every six months. Stores organized to enable forklifts to load & unload safely & pedestrians to pass safely. Flooring maintained to reasonable standard.</i> | <i>Lift truck must be regularly maintained. Operators must be trained.</i> | <i>No further action required.</i> |
| Manual handling In the stores; movement of components. | <i>All employees, particularly those in the stores.</i> | <i>Fork-lift truck used to move materials into store & take components to workshop. Manual handling still required.</i> | <i>Avoid the risk of injury by removing the need for manual handling or provide mechanical aids. If risk cannot be avoided, a more detailed assessment may be needed.</i> | <i>Manager to arrange manual handling training for the staff in the store. More detailed assessment to be carried out.</i> |
| Noise Particularly in body repair work. | <i>All employees, particularly those involved with body work.</i> | <i>Hearing protection must be worn when working with noisy equipment e.g. air saws</i> | <i>Exposure to noise must be assessed & controlled. Where risk cannot be adequately reduced, hearing protection should be provided.</i> | <i>Supervisors to monitor use of hearing protection.</i> |
| Welding Toxic fumes, sparks, arc flash. | <i>Employees performing the task. Others nearby.</i> | <i>A range of head & body protection used depending on the type of welding operation. Local exhaust extraction (LEV) in place.</i> | <i>Exposure to radiation must be prevented. WHMIS</i> | <i>Screens to be provided to protect others from radiation. Arrange periodic testing of LEV.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Slips, trips & falls at grade | <i>All employees.</i> | <i>Good housekeeping standards kept through training & monitoring. Floors degreased weekly. Absorbent granules & sawdust put on spills as soon as possible. Entrances & exits maintained.</i> | <i>Condition & type of flooring, amount of lighting & standard of housekeeping should be such to prevent injury.</i> | <i>Walkways & storage areas designated by yellow lines.</i> |
| Compressed air (i) Explosion of equipment, tires, (ii) Injection of air in the body | <i>All employees.</i> | <i>All employees trained in safe working procedures. Air line has shut-off. System inspected & serviced every six months.</i> | <i>Equipment regularly maintained. Tires should be handled with appropriate tools & inflated to correct pressure. Accidental injection of air or material must be avoided</i> | <i>No further action required.</i> |
| Waste Disposal | <i>All employees, & others who remove the waste</i> | <i>Materials disposed of in colour-coded waste bins. Waste removed by firm of specialist contractors.</i> | <i>Other people (waste disposal personnel) who may be affected by the work activity must be protected.</i> | <i>No further action required.</i> |
| Hand tools | <i>All employees</i> | <i>Tool box provided for correct storage when not in use. Damaged tools taken out of use immediately.</i> | <i>Hand tools must be properly maintained & only used for the appropriate job.</i> | <i>Supervisor to monitor maintenance & use.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Hygiene & comfort | <i>All employees.</i> | <p><i>Heated kitchen area provided.</i></p> <p><i>Washrooms available, and cleaned daily.</i></p> <p><i>Locker room for drying & storage of warm clothes & work clothing /equipment provided.</i></p> <p><i>Portable heaters used during the winter in the workshop.</i></p> | <p><i>Adequate sanitary & washing facilities, supply of drinking water, rest facilities & a place to dry, change & store clothes must be supplied.</i></p> <p><i>Also facilities for eating food so that it does not become contaminated.</i></p> <p><i>An adequate working temperature should be provided.</i></p> | <i>No further action required.</i> |

Case Study: Risk Assessment Table in a Warehouse

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Fire</p> <p>Bulk storage of easily burned materials.</p> <p>Ignited through electrical fault, smoking materials, battery recharging etc.</p> | <p><i>All employees, visitors.</i></p> | <p><i>Building designed with fire-resisting materials.</i></p> <p><i>Exits & fire exits clearly marked.</i></p> <p><i>Fire extinguishers located throughout warehouse.</i></p> <p><i>Access to all exits and fire extinguishers kept clear at all times.</i></p> <p><i>Fire detection & alarm system in place.</i></p> <p><i>Fire evacuation procedures displayed at each fire alarm point.</i></p> <p><i>Maintenance contracts for extinguishers & detection/alarm system.</i></p> <p><i>Fire drill & training in use of extinguishers held once year.</i></p> <p><i>Smoking prohibited in the warehouse.</i></p> <p><i>Cleaner ensures no debris left around warehouse.</i></p> <p><i>All staff trained in good housekeeping during orientation</i></p> | <p><i>Escape routes & firefighting equipment should be managed.</i></p> <p><i>Staff should be trained in fire drill, fire fighting & good housekeeping.</i></p> <p><i>Minimize opportunities for fire to occur.</i></p> <p><i>Advice from the local fire authority may be needed depending on the warehouse activity.</i></p> | <p><i>Discussions with insurer on the provision of automatic closing of roller-shutter doors linked to fire alarm are being considered.</i></p> |
| <p>Operation of Forklifts</p> | <p><i>All employees, visitors.</i></p> | <p><i>All operators trained to CSA Standard for the appropriate type of forklift</i></p> <p><i>Forklift serviced regularly.</i></p> <p><i>Trucks parked in separate bay & locked out when not in use.</i></p> | <p><i>Forklift regularly maintained.</i></p> <p><i>Operators must be trained.</i></p> | <p><i>Operators to check forklifts each shift every day before starting.</i></p> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Traffic movements (inside & outside)</p> | <p><i>All employees, visitors.</i></p> | <p>Internal</p> <p><i>Walk ways and aisles of sufficient space to enable fork-lifts to load and unload from the racking safely and allow safe passage of pedestrians in the warehouse.</i></p> <p><i>Access to warehouse restricted to employees.</i></p> <p><i>Floor condition maintained on a regular basis, housekeeping standards maintained by cleaner & workforce.</i></p> <p><i>Warning signs located around the traffic route.</i></p> <p>External</p> <p><i>Parking of cars & vans only allowed in marked spaces well away from external shipping & receiving area.</i></p> <p><i>Outside area gritted when frosty, snow cleared.</i></p> <p><i>Reversing of delivery van overseen by warehouse worker.</i></p> | <p><i>A safe system of traffic management must be devised to allow vehicles/pedestrians to move about safely.</i></p> | <p><i>Separate pedestrian entrance(s) with protective barrier rail to be provided next to roller-shutter doors.</i></p> <p><i>Housekeeping standards & floor condition to be covered by a monthly inspection by manager and a brief record kept.</i></p> <p><i>Worker overseeing reversing to be given 'high visibility' vest.</i></p> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Manual handling</p> <p>Regular movement of cartons to pallets.</p> <p>Rolls of stretch wrap, and flat pallets.</p> | <i>All employees.</i> | <p><i>Conveyor system available to reduce manual handling of materials in & out of delivery trucks.</i></p> <p><i>A range of manual handling tasks still required</i></p> | <p><i>Avoid the risk of injury by removing the need for manual handling or provide mechanical aids.</i></p> <p><i>If risk cannot be avoided, a more detailed assessment, as required.</i></p> | <p><i>Manual handling training to be given to all warehouse staff.</i></p> <p><i>More detailed manual handling assessment to be carried out.</i></p> |
| <p>Portable electrical equipment</p> <p>Including conveyor & wrapper, industrial cleaner, kettle, fridge, heater in lunch room.</p> | <i>All employees</i> | <i>Installed electrical equipment receives regular maintenance.</i> | <i>Equipment must be used & maintained to prevent danger e.g. visual checks by users, periodic formal inspection & testing of equipment liable to damage.</i> | <p><i>Inspection and testing of portable equipment to be arranged & recorded by manager.</i></p> <p><i>Training for staff to include visual checks of electrical equipment.</i></p> |
| <p>Falling objects</p> <p>From racking & during movement.</p> | <i>All employees, others.</i> | <p><i>Racking not modified in any way by staff.</i></p> <p><i>Racking not overloaded.</i></p> <p><i>Staff to report any damage to racking immediately.</i></p> <p><i>Defective pallets removed from use immediately.</i></p> <p><i>Protective footwear & hard hats used by all entering storage areas.</i></p> <p><i>Protective gloves provided to handle pallets.</i></p> | <i>The method of storage & safe work procedures should minimize risk of falling materials.</i> | <i>Head protection signs posted at entrance into storage areas.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|----------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Slips, trips & falls | <i>All employees, others.</i> | <i>Quality of flooring maintained. All staff trained to maintain good housekeeping standards & ensure stock does not project into gangways. Cleaner removes packing debris daily & tidies all areas of warehouse. Pallets stored safely in designated area.</i> | <i>Condition/type of flooring, amount of lighting & standard of housekeeping should be such to prevent injury.</i> | <i>Suitable spill kit to be made available for liquid spills.</i> |
| Hazardous substances Vehicle exhaust fumes. Bleach & cleaning fluids | <i>All employees. Cleaner.</i> | <i>No. of vehicles delivering materials is relatively low; this prevents build-up of fumes. Cleaner made aware of safe work procedures. Rubber gloves used.</i> | <i>Exposure to hazardous substances minimized as required by WHMIS regulations. Firstly, prevent exposure by not using substance or using safer substitute; otherwise adequately control exposure. Health surveillance necessary. Effectiveness of control measures should be monitored, & equipment maintained.</i> | <i>Investigate availability of safer alternatives for cleaner.</i> |
| Recharging of forklift batteries – potential explosion by release of hydrogen, spill of acid | <i>All employees. Fork-lift drivers.</i> | <i>Batteries charged in designated bay that is well ventilated. Safe work procedures used which includes provision & use of goggles & gloves. Potential sources of ignition controlled.</i> | <i>Safe work procedures must be followed to prevent build-up of hydrogen or spill of concentrated acid.</i> | <i>Supervisor to monitor to ensure PPE (personal protective equipment) is being worn.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to be met | Future actions |
|-----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Lighting | <i>All employees, visitors.</i> | <i>Good quality lighting provide throughout the warehouse. Cleaner checks that light units are operating & replaced by electrician when necessary. Floodlighting in the external area.</i> | <i>Adequate lighting levels appropriate to the activity should be provided.</i> | <i>No further action required.</i> |
| Hygiene/comfort | <i>Employees.</i> | <i>Heated lunch room provided with hot & cold water and water for beverages. Area kept clean. Lockers available for employees' belongings. Washrooms a short walk away, cleaned daily.</i> | <i>Adequate sanitary & washing facilities, supply of drinking water, rest facilities & a place to dry, change & store clothes must be supplied. Also facilities for eating food which would otherwise become contaminated</i> | <i>No further action required.</i> |

Case Study: Risk Assessment Table of a Masonry Contractor

| Hazard | Who might be harmed? | Existing controls | Standard to reached |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fall from a height | <i>All workers using scaffolding</i> | <p><i>Bricklayers' supervisor to check that scaffolding was erected to adequate standards by qualified subcontractors & that inspections have been carried out & recorded.</i></p> <p><i>Scaffolding not to be interfered with or misused.</i></p> <p><i>Scaffolding not to be overloaded or overcrowded with people or objects.</i></p> <p><i>Ladders to be in good condition, adequately secured (lashed) & placed on firm surface.</i></p> | <p><i>Scaffolding must be designed, erected, altered & dismantled by competent workers under competent supervision.</i></p> <p><i>It must be suitable for the work undertaken & must be provided with adequate boarding, toe boards & hand rails</i></p> <p><i>It must be provided with adequate means of access.</i></p> |
| Falling Objects | <i>All workers site visitors, members of the public in the vicinity of scaffolding or of unloading operations.</i> | <p><i>Debris netting kept in position on scaffold.</i></p> <p><i>Waste materials to be removed from scaffolding and place in waste bins</i></p> <p><i>Hard hats and safety boots to be worn at all times.</i></p> | <i>First of all, avoid risk of injury by preventing materials from falling, then reduce remaining risk with personal protective equipment</i> |
| Slips, trips & falls Around the site | <i>All workers</i> | <p><i>Good housekeeping to be maintained at all times.</i></p> <p><i>Waste including bands & pallet debris to be disposed of in waste bins.</i></p> <p><i>Temporary storage locations to be agreed with site manager.</i></p> | <i>Surfaces to be kept free of obstruction, so far as is reasonably practicable.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manual handling Glass bricks, mortar, equipment movement up and down ladders & scaffolding. | <i>Bricklayers</i> | <i>Manual handling hazards to be minimized by use of mechanical aids.</i> | <i>Avoid risk of injury by removing the need for manual handling or provide mechanical aids.</i> <i>As the risk cannot be avoided, a more detailed assessment is required.</i> |
| Hazard to eyes Cutting, drilling & grinding. | <i>Bricklayers.</i> | <i>Eye protection to be worn when cutting, drilling & grinding glass blocks.</i> | <i>Suitable eye protection should be provided & worn to protect against flying objects.</i> |
| Mechanical equipment Cement mixer angle grinder. | <i>Bricklayers & other workers in the vicinity.</i> | <i>All mechanical equipment to be checked daily & defects reported to the site supervisor.</i> <i>Mechanical equipment not to be left running unattended.</i> <i>Cement mixer to be located on firm level ground.</i> <i>Guards to be in place during operation.</i> | <i>Dangerous parts of mechanical plant & machinery must be provided with guards where practicable.</i> <i>Mechanical equipment must be adequately checked & maintained.</i> |
| Noise From use of equipment e.g. angle grinder. | <i>Those using the equipment</i> | <i>Noise suppressed equipment to be used where available</i> <i>Hearing protection available for use with equipment.</i> | <i>Exposure to noise must be assessed & controlled.</i> <i>Where risk cannot be eliminated hearing protection should be provided.</i> |
| Hand tools | <i>Brick layers</i> | <i>Damaged tools to be taken out of use immediately.</i> | <i>Hand tools must be properly maintained & only used for the appropriate job.</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached |
|-----------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire/explosion From ignition of fuel or trash | <i>All workers in the vicinity.</i> | <i>Diesel fuel & gas to be held in minimum quantities & stored in lockable cage with appropriate fire hazard sign affixed,</i> <i>Suitable fire extinguisher to be kept in vicinity.</i> <i>Good housekeeping to be monitored by supervisor.</i> | <i>Minimize opportunities for fire to occur.</i> |
| Hazardous substance Mortar Dust from angle grinding. | <i>Brick layers</i> <i>Brick layers</i> | <i>Data sheet for mortar to be made available to all workers.</i> <i>Direct skin contact to be avoided, gloves to be used when handling mortar</i> <i>Exposure to be treated with soap/water or eyewash.</i> <i>Dust mask & eye protection to be worn when angle grinder in use.</i> <i>Grinding wheels to be changed & set by trained operatives only. Situation to be kept under review in case new hazardous substances are introduced on site.</i> | <i>Exposure to hazardous substances minimized as required by WHMIS regulations.</i> <i>Firstly, prevent exposure by not using substance or using safer substitute; otherwise adequately control exposure.</i> <i>Health surveillance may be necessary.</i> <i>Effectiveness of control measures should be monitored, & equipment maintained.</i> |
| Hygiene/comfort | <i>Brick layers</i> | <i>Mobile lunch room with propane gas heater & hot & cold water to be provided. Portable toilets, provided by general contract.</i> | <i>Adequate sanitary & washing facilities, supply of drinking water, rest facilities.</i> |

Case Study: Risk Assessment Table for Landscape/gardening

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact with buried underground services E.g. cutting live electric cables. | <i>Employees.</i> | <i>Consultation with client, public utilities & other contractors to identify location of buried services.</i> <i>Secure permit-to-dig where required.</i> | <i>Safe work procedures required to avoid striking underground services, by detecting services, safe digging practice.</i> | <i>Company to purchase a cable detector & arrange for training of staff.</i> |
| Mechanical equipment Mowers, trimmers, shredders, chainsaw, hedge clippers, sprayers. | <i>Employees (contact with moving parts).</i> | <i>Equipment operated only by authorized trained personnel.</i> <i>Guards provided by machine suppliers.</i> <i>A range of personal protective equipment (ppe).</i> <i>Equipment regularly maintained by contract.</i> | <i>Dangerous parts of mechanical plant & machinery must be provided with guards where practicable.</i> <i>Mechanical equipment must be adequately checked & maintained.</i> <i>Operated by those with suitable training & wearing appropriate ppe.</i> | <i>Users to be trained to report faults immediately.</i> <i>Supervisor to monitor the wearing of ppe.</i> <i>Formal check of machine guarding to be carried out.</i> |
| Falling objects and objects striking body While using the machinery & when working on construction sites. | <i>Employees, others.</i> | <i>Employees wear ppe particularly hard hats & safety foot wear.</i> <i>Work area cordoned off & signed to keep members of the public away.</i> | <i>Head & foot protection required as necessary.</i> | <i>Supervisor to monitor the wearing of ppe.</i> |
| Noise From machinery. | <i>Those using the machinery.</i> | <i>Hearing protection worn when working with some machinery.</i> | <i>Exposure to noise must be assessed and controlled.</i> <i>Where risk cannot be eliminated, hearing protection should be provided.</i> | <i>Supervisor to monitor the wearing of ppe</i> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hazardous substances Mixing & using spill during transport</p> <p>Pesticides (e.g. Round up, Dextrone, Checkmate Fertilizers)</p> | <i>Employees, public</i> | <p><i>Pesticide applicator certificate when required.</i></p> <p><i>All users receive instruction in safe working practice & wearing of ppe</i></p> <p><i>Substances carried in minimal amounts in approved storage boxes/vessels.</i></p> | <p><i>Exposure to hazardous substances minimized as require by WHMIS.</i></p> <p><i>Firstly, prevent exposure by not using substance or using safe substitute: otherwise adequately control exposure.</i></p> <p><i>Effectiveness of control measures should be monitored, and equipment maintained.</i></p> | <p><i>Review WHMIS assessments.</i></p> <p><i>Introduce safe substitutes & safer means of application where possible.</i></p> |
| Storage & use of gasoline | <i>Employees, public.</i> | <p><i>Gasoline kept under conditions specified in the safe work procedures.</i></p> <p><i>Gasoline stored & transported in approved containers.</i></p> | | <i>No further action required.</i> |
| Manual handling | <i>Employees.</i> | <p><i>Job rotation to ensure no single employee performs same repetitive task all day.</i></p> <p><i>All employees undergo training in manual handling.</i></p> | <p><i>Avoid risk of injury by removing the need for manual handling or provided mechanical handling aids.</i></p> <p><i>If the risk cannot be avoided, a more detailed assessment, is required.</i></p> | <p><i>Request employees to report to first aid attendant if they experience upper limb pain who will decide if they need to refer them to medical aid.</i></p> <p><i>Supervisor to review manual-handling assessments.</i></p> |

| Hazard | Who might be harmed? | Existing controls | Standard to reached | Future actions |
|-----------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Transport Trucks to machinery, chemicals, garden waste etc. Other contractors' vehicle | <i>Employees, others.</i> | <i>Trucks only driven by authorized staff.</i> | <i>Vehicles must be adequately maintained, & driven by trained operators.</i> <i>Ensure other workers have distinguishing apparel.</i> | <i>No further action required.</i> <i>Obtain high visibility clothing. Supervisor to monitor use.</i> |
| Welfare/ comfort | <i>Employees.</i> | <i>Depending on duration of the work, the supervisor negotiates the use of general contractor facilities.</i> | <i>Adequate sanitary & washing facilities, supply of drinking water, rest facilities.</i> | <i>No further action required.</i> |

Appendix 3: Hazard Analysis Procedures Worksheet

Hazard Analysis Safe Work Procedures Worksheet

Date: _____ Job: _____

Duty: _____ Task: _____

| Elements | Hazards | Safe Work Procedures |
|----------|---------|----------------------|
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |
| #_ _____ | 1. | 1. 2. 3. |
| | 2. | 1. 2. 3. |
| | 3. | 1. 2. 3. |
| | 4. | 1. 2. 3. |
| | 5. | 1. 2. 3. |

Notes
