

Part 4 Chemical Hazards, Biological Hazards and Harmful Substances

Highlights

- OEL changes — Occupational Exposure Limits (OELs) were revised for nearly 150 substances (see Schedule 1, Table 2). The revised OELs are based largely on the 2006 American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for Chemical Substances.
- Section 16 prohibits a worker being exposed to a chemical substance at a concentration exceeding its ceiling limit at any time and to a concentration that is immediately dangerous to life and health.
- Section 18 requires employers to ensure that OELs are adjusted for work shifts longer than eight hours.
- Section 20 recognizes alternate analytical methods for the measurement of exposure concentrations.
- Sections 21 and 22 require employers to assess worker exposure to harmful substances and sets monitoring requirements.
- Section 26 requires employers to prepare a code of practice governing the storage, handling, use and disposal of any substance present at a work site that is listed in Table 1 of Schedule 1. (Section 8 of the *OHS Regulation* requires that procedures specified by a code of practice be in writing and available to workers).
- Sections 28 through 43 provide rules regarding asbestos, silica and coal dust.
- Section 37 requires that employers ensure asbestos workers working in restricted areas have successfully completed an approved asbestos course.
- Section 39 allows employers to use crystalline silica for abrasive blasting. However, the employer must, if reasonably practicable, ensure that crystalline silica is replaced with a less harmful substance.

- Section 41 requires that employers develop an exposure control plan for lead for work sites where workers may be adversely affected by lead exposure. Section 43 describes the corresponding medical monitoring requirements. (Section 8 of the *OHS Regulation* requires that the plan be in writing and available to workers).

Requirements

Section 16 Worker exposure to harmful substances

This section requires an employer to ensure that worker exposure to a harmful substance is kept as low as reasonably practicable/reasonably achievable and does not exceed the substance's OELs. This is based on the principle that for each substance there is a safe or tolerable level of exposure below which no significant adverse health effects are likely to occur. Many factors affect total exposure, including

- (a) the potential for absorption into the body by inhalation, ingestion or skin absorption,
- (b) the duration of exposure, and
- (c) the effect of simultaneous exposure to multiple substances.

The *OHS Act* requires that employers ensure, as far as it is reasonably practicable to do so, the health and safety of workers at their work site. In this section, the term "reasonably achievable" is used. Understanding of the term reasonably achievable comes from the Canadian Nuclear Safety Commission Regulatory Guide (2004, for "*Keeping Radiation Exposures and Doses as Low as Reasonably Achievable (ALARA)*"). Though the term reasonably achievable has not been given definite meaning by the Canadian Court system, it is generally accepted in industry and by regulators to encompass the same considerations as the concept of "reasonably practicable".

Reasonably practicable is a concept used by the courts and is assessed using the "reasonable person test". This test asks what a dozen of your peers e.g. twelve workers with equal qualifications and experience, would consider reasonable in a similar set of circumstances. The persons would likely review what happened and compare it against what they do in their own operations. Some of them might do more, others less. The result would be a balanced and wise judgment that could be defended to others. Reasonably practicable is a term that has been tested in the courts and supports a high standard of effective workplace protection for workers.

Factors that might be considered when evaluating exposure to a harmful substance include

- What is common practice in other workplaces that use the substance or process?
Are exposure levels at the workplace similar to those at other workplaces that

use the substance or process?

- Has the employer assessed whether exposure can be eliminated by substitution with a less toxic substance or other control measures? If these measures have not been implemented, what is the rationale for not doing so?
- Are workers exposed to multiple substances at the workplace that may have synergistic, potentiating or additive effects?
- Are workers experiencing adverse health effects even though exposure may be at or below the OELs?

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_li015.pdf

Due Diligence

The OHS Code requires that exposure be kept as low as reasonably practicable/reasonably achievable where there are harmful substances used in the workplace for which there are currently no OELs. Employers determining safe levels of exposure in such circumstances should consult other jurisdictions and organizations as well as the product manufacturer to obtain guidance on safe exposure limits. For example, the American Industrial Hygiene Association publishes Workplace Environmental Exposure Levels (WEELs) for a wide variety of substances. Section 9 of the *OHS Act* allows an occupational health and safety officer to enforce an exposure limit from another jurisdiction or organization if there is no OEL.

The three main routes of entry of a substance into the body are

- (1) inhalation – by being inhaled,
- (2) dermal – by being absorbed through the skin, and
- (3) oral – by being swallowed.

Inhalation is the most common route of entry. Most exposure standards, including the OELs, are based on exposure resulting from the inhalation of substances suspended in air, either as a gas, vapour or aerosol such as dust, mist or fume.

Another way substances enter the body is absorption through the skin. The amount of chemical absorbed through the skin depends on the chemical and it is important to take this into consideration when determining exposure. Substances for which exposure via skin absorption is a potentially significant route of exposure have the designation “2” in the substance interaction column in Schedule 1, Table 2.

Oral exposure or ingestion usually occurs by accident through the contamination and subsequent ingestion of food or materials that come into contact with the mouth. Contaminants can also be ingested through hand-to-mouth contact such as nail biting or hand contamination of food or smoking materials.

Individual susceptibility to adverse effects from exposure to substances varies widely. A small percentage of workers may feel discomfort at or below the OEL. The OEL should not be used as a fine line between safe and unsafe conditions or as an index of relative toxicity. Some workers may be affected more seriously due to aggravation of a pre-existing condition or by development of an occupational illness. In addition, some individuals are extremely sensitive to certain industrial chemicals due to genetic factors, personal habits such as smoking or alcohol use, the use of drugs or medications, pre-existing health conditions or previous exposure. These workers may not be adequately protected from adverse health effects resulting from exposure to substances that are at concentrations at or below their OEL. The extent to which these workers need more protection should be evaluated by an occupational physician.

Compliance in cases of short-term excursions

Short term exposure limits are concentrations of a substance to which it is believed that most workers may be exposed for a short period of time without suffering from adverse health effects such as irritation and chronic or irreversible tissue damage. The worker also should not be physically impaired to a degree that could increase the likelihood of accidental injury, impair self rescue or reduce work efficiency. It is not a separate exposure limit. It supplements the 8-hour OEL.

Employers must comply with the following rules on short-term excursion limits:

- (a) worker exposure measured over any 15-minute period must not exceed the 15-minute OEL. Worker exposure to a substance measured over successive 15 minute periods, at a concentration above its 8-hour OEL, but at or below its 15-minute OEL, must not happen more than four times per day. There must be at least 60 minutes between successive exposure periods in this concentration range and the 8-hour OEL may not be exceeded for the work shift;
- (b) worker exposure must never exceed ceiling levels which are denoted in Table 2 of Schedule 1 by a "c". Ceiling limits can be measured using a direct reading instrument such as a colorimetric detector tube or an instrument with a diffusion controlled sensor which effectively averages measurements over approximately 1 minute; and

- (c) if there is no 15-minute or ceiling OEL listed for a substance, the 8-hour OEL may not be exceeded and the “3X and 5X” rule applies. A worker must not be exposed to 3 times the 8-hour OEL for more than a total of 30 minutes during a continuous 24-hour period and 5 times the 8-hour OEL at any time. However, in no case can the immediately dangerous to life and health (IDLH) concentration be exceeded.

As defined in Part 1 of the OHS Code, IDLH means “circumstances in which the atmosphere is deficient in oxygen, or the concentration of a harmful substance in the atmosphere

- (i) is an immediate threat to life,
- (ii) may affect health irreversibly,
- (iii) may have future adverse effects on health, or
- (iv) may interfere with a worker’s ability to escape from a dangerous atmosphere”.

Some materials, i.e. hydrogen fluoride gas and cadmium vapour, may produce immediate transient effects that, if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim “feels normal” from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be “immediately dangerous to life and health”.

IDLH concentrations are described in NIOSH publication NTIS Publication No. PB-94-195o47: *Documentation for Immediately Dangerous to Life or Health Concentrations (IDLH)*, May 1994. This publication documents the criteria and information sources that have been used by NIOSH to determine immediately dangerous to life or health concentrations.

For more information



www.acgih.org

American Conference of Governmental Industrial Hygienists



http://employment.alberta.ca/documents/WHS/WHS-PUB_ch055.pdf

The Effects of Unusual Work Schedules and Concurrent Exposures on Occupational Exposure Limits (OELs) (Safety Bulletin CH055)



www.cdc.gov/niosh/idlh/idlh-1.html

Documentation for Immediately Dangerous to Life or Health Concentrations

Section 17 Exposure to multiple substances

Workers are often exposed to a mixture of chemicals rather than a single substance. However, exposure standards or limits are usually based on information, testing or experience from exposure to a single chemical rather than a mixture of chemicals. The resulting biological effects of exposure to multiple chemicals is rarely known.

The combined effects of chemicals are commonly described as follows:

- (a) *Independent* — the toxicity of each substance is produced by independent mechanisms and/or the substances act on separate organs or systems within the body. Independent substances create their own toxic effects without influence or interference from one another.
- (b) *Additive* — substances with similar toxicity produce a response that is equal to the sum of the effects produced by each of the individual substances acting alone.
- (c) *Antagonistic* — the toxicity of one chemical is reduced by exposure to another chemical.
- (d) *Potentiating* — a substance does not have a toxic effect on a certain organ but when combined with exposure to another substance, the first substance becomes much more toxic.
- (e) *Synergistic* — two substances act together to produce toxic effects that are greater than the effects produced by either substance alone.

In evaluating the impact of exposure to more than one chemical at a time, materials acting independently can be evaluated independently. Where the potential for synergistic or potentiating effects are suspected, this enhancement of toxic effect must be reflected in the allowable exposure. There is no model for adjustment of exposure limits to account for synergistic or potentiating effects. The easiest solution is to avoid the effect by finding a substitute for one or more of the chemicals involved. In occupational settings, antagonistic effects are not used as a basis for decreasing exposure limits.

Where chemicals are known to have additive effects, the equation provided in this section allows the employer to determine whether the OEL is being exceeded. To prevent overexposure, the sum of the standardized exposures must not exceed the value "one". A mixture of xylene and toluene is an example of two substances that produce additive effects; a mixture of xylene and asbestos is an example of two substances that produce independent effects. The equation can be used in the first example, not in the second.

Section 18 Exposure during shifts longer than 8 hours

The amount of time a worker is exposed to a substance has a large effect on the total amount of material absorbed by the body. Non-traditional work schedules have become more common in the workplace. There is an increasing trend towards longer workdays with more days off between shifts. Many continuous process operations such as chemical manufacturing, oil refining, steel processing, oil and gas exploration and paper processing require two or three shifts in a 24 hour period to accommodate continuous production. Workers may routinely work overtime during periods of heavy demand. A second job may also result in workers being exposed to chemicals for extended periods.

OELs are based on the assumption that exposure occurs over an 8-hour period, following which the body is no longer exposed, but allowed to recover for the next 16 hours. When work shifts exceed 8 hours, these assumptions no longer hold true and the worker could be at increased risk of exposure. Although limits can be adjusted downward to accommodate longer periods of exposure, limits cannot be adjusted upwards to accommodate shorter periods of exposure. Numerous substances listed in Table 2 of Schedule 1 appear with the number "3" in the "Substance Interaction" column. For these substances, occupational exposure limits do not need to be adjusted to compensate for unusual work schedules.

The risk of an increased exposure to certain chemicals (body burden) has been recognized and several models have been proposed to modify the 8 hrs/day, 40 hrs/week standard to a "non-standard" workday. The intent of the models is to maintain the same overall body burden yet preserve the same margin of safety as the original standard. The Brief and Scala model used in this section is the simplest and most conservative model. It compensates for unusual work schedules by reducing the permissible concentration in proportion to both the increase in exposure time and the reduction in recovery time.

The employer may use other models to adjust exposure time as long as the models have been developed using recognized scientific principles approved by a Director of Occupational Hygiene. A Director of Occupational Hygiene is a staff member of

Alberta Employment and Immigration, appointed by the Minister under section 5 of the *OHS Act*. It is recommended that a competent person be consulted to ensure that the adjustment method is appropriate and applicable since many models are theoretical and contain assumptions that may not apply to every chemical and work environment.

An understanding of the chemical is required and caution must be taken when limited toxicity data is available, the toxic effect is serious, or the chemical accumulates in the body following repeated exposure. The Director of Occupational Hygiene may accept alternate methods through approval of individual applications or publication of a Safety Bulletin. To obtain approval from the Director, the employer must show that

- (a) the method is appropriate for the substance(s) used at the workplace. The employer will need to provide justification and a rationale for use of the particular method, and
- (b) if the exposure is to more than one substance, possible potentiating and synergistic effects have been taken into account when applying the method.

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_ch055.pdf

The Effects of Unusual Work Schedules and Concurrent Exposures on Occupational Exposure Limits (OELs)

Section 19 Review of exposure limits

Requests to review a specific occupational exposure limit should be sent to a Director of Occupational Hygiene at the following address:

Director of Occupational Hygiene
Alberta Employment and Immigration
Workplace Standards Division
8th Floor, 10808-99 Avenue
Edmonton, Alberta
T5K 0G5

Section 20 Airborne concentration measurements

NIOSH and alternate methods


The measurement of exposure concentrations at the workplace is important since compliance with the OELs is based on comparing measured levels with those specified in the OHS Code. The adoption of OELs by the OHS Code reflects the fact that there are valid, tested and reproducible methods for the collection and analysis of the substances involved. Small errors or departures from accepted methods can have a large impact on worker exposures and the costs of compliance.

Revisions to this section of the OHS Code allow for the use of methods developed by seven agencies:


- (1) National Institute of Occupational Safety and Health – NIOSH
- (2) Occupational Safety and Health Administration (United States) – OSHA
- (3) Health and Safety Executive (Great Britain) – HSE
- (4) Environmental Protection Agency (United States) – EPA
- (5) Institut de Recherché Robert-Sauvé en Santé et en Sécurité du Travail (Quebec) – IRRSST
- (6) International Organization for Standardization (Technical Committee TC146) – ISO
- (7) Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (Germany) – Deutsche Forschungsgemeinschaft


More information, and in some cases the actual methods, can be found at the following

 <http://www.cdc.gov/niosh/nman/>
NIOSH Manual of Analytical Methods

 <http://www.osha.gov/dts/sltc/methods/>
OSHA Sampling and Analytical Methods


 <http://www.hse.gov.uk/pubns/mdhs/>
HSE Methods for the Determination of Hazardous Substances Guidance

 <http://www.epa.gov/osa/fem/methcollects.htm>
US EPA Test Methods

 http://www.irsst.qc.ca/en/outil_100038.html
IRRSST Workplace Air Contamination Sampling Guide (8th edition, French language only)

 http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_tc_browse.htm?commid=52702

ISO

 Deutshe Forschungsgemeinschaft Analyses of Hazardous Substances in Air (must be obtained through a library or purchased)

If there is no specific method for a particular substance, or if the employer wishes to use an alternative analytical method, the method used must be acceptable to a Director of Occupational Hygiene. The Director may accept alternative methods through approval of individual applications or publication of a Safety Bulletin. To obtain approval from the Director, the employer must show:

- (a) the precision and accuracy of the method;
- (b) who has previously developed and evaluated the method. For example, has the method been developed by a recognized independent source;
- (c) the quality assurance and quality control measures that will be used;
- (d) interferences with the method i.e. other substances that could affect the results; and
- (e) biases with the method i.e. will the method tend to give higher or lower values, false positives or false negatives.

Users of the analytical methods must be sure to look at the detection limits and limits of quantification of the methods. When reporting results, these limits must be used and values reported with the correct number of significant digits.

When measurements are made, conditions at the workplace on the day the measurements were taken should be recorded. This will include

- (a) environmental conditions such as temperature, pressure and humidity,
- (b) time and date,
- (c) production levels,
- (d) ventilation levels and air circulation,
- (e) location of the sample and a description of the area around the sample, and
- (f) type of sample such as area or personal.

In addition, the person collecting the samples should state the reasons for the number and location of samples collected.

Use of a direct reading instrument

In some cases, a direct reading instrument may be more appropriate for monitoring worker exposure, but there are no specified methods. An example of such a compound is hydrogen sulphide.

If an employer uses a direct-reading instrument to measure exposure to a substance, the employer must ensure that the instrument is used, calibrated and maintained according to the manufacturer's specifications. This means that the employer must ensure that

- (a) factory calibrations are done according to the manufacturer's recommendations,
- (b) the instrument should be field calibrated on a daily basis,
- (c) workers need to be trained in the proper operation and field calibration of the instrument,
- (d) the instrument is used properly, and
- (e) someone is responsible for tracking the instrument and making sure that it is properly maintained.

The OHS Code requires that the person who conducts airborne exposure measurements be competent to do so. This means that the person must have specific training and experience in this area. Examples of persons who may have suitable qualifications include Certified Industrial Hygienists and Registered Occupational Hygienists, as well as other professionals with training in the areas of occupational health and safety

NIOSH Method 7400

NIOSH Method 7400 (Asbestos and Other Fibres by PCM) provides rules for counting fibres to determine the fibre concentration in a sample. Only fibres meeting the criteria specified in the definition of "fibre" may be counted (see Part 1).

When using NIOSH Method 7400 (Asbestos and Other Fibres by PCM), the limit of detection is approximately 2,700 fibres per filter and the range is 100 to 1,300 fibres per square millimetre of filter area. Results from this method, in fibres per cubic centimetre, must be reported to two decimal places and take significant digits into account e.g. 0.01, not 0.014.

For more information

 www.cdc.gov/niosh/nmam

NIOSH Manual of Analytical Methods (NMAM), 4th ed.

Section 21 Potential worker exposure

The purpose of the hazard assessment is to determine the exposure, or potential for exposure, of workers to a harmful substance at their work site. An exposure hazard cannot be controlled without knowing the identity of the harmful substance and the extent to which workers are exposed to it. The toxicity of the substance — type of action, route of exposure and target organs — must be known, as well as the duration of exposure. Other factors that may contribute to the degree of hazard include:

- (a) the nature of the process in which the material is used or generated;
- (b) the possibility of reaction with other physical or chemical agents;
- (c) the degree to which controls such as ventilation and enclosure are effective; and
- (d) the type and degree of toxic response in both the “average” and highly susceptible worker.

Almost every work environment has potential or actual hazards that need to be recognized, measured and monitored. An initial assessment should be performed in any work area where there is a potential for exposure, or there have been complaints of health effects experienced by workers. The assessment should include a walk-around survey of the operation, identification of all the chemicals used at the work site, talking to workers about past experiences and safety concerns and measurement of contaminants in air.

Consider the raw materials being used, how they are modified and the finished product. Each process step from raw material to finished product must be evaluated under normal and anticipated emergency conditions. Re-assessments should be conducted on an annual basis and when

- (a) new equipment or work processes that could affect worker exposure are introduced to the work site;
- (b) work practices or procedures change; or
- (c) workers complain of adverse effects during or after work shifts.

The hazard assessment must be performed by a competent individual. Workers should be permitted and encouraged to observe and participate in monitoring activities as long as doing so does not interfere with the activities. Workers frequently have the experience to identify sources of exposure, indicate when exposure may differ from “normal” and identify conditions that are routine or not routine.

Once hazards at the workplace have been identified, the employer must take steps to eliminate, or if this is not possible, control the hazards. To eliminate the hazard, the employer may substitute a less hazardous substance or modify equipment or

processes to eliminate emissions. If elimination of the hazard is not possible, various control strategies can be used.

The employer should always investigate engineering controls first, then administrative controls, and finally the use of appropriate personal protective equipment. Engineering controls minimize or eliminate exposure by altering or removing the source. Administrative controls influence exposure by modifying the circumstances of the worker's exposure. Personal protective equipment should only be considered when other control measures are not practicable or do not sufficiently reduce the hazard.

Workers who may be exposed to a harmful substance must receive training in the procedures that minimize their exposure to the substance. The training must, at a minimum, include

- (a) information describing the health hazards associated with exposure to the substance, and
- (b) training in the procedures to be used to reduce exposure.

If the hazard assessment indicates that there is a potential for a worker to be exposed to a substance in excess of its OEL, the employer must measure the airborne concentrations of the substance. Measurements must be made in accordance with NIOSH analytical methods or methods acceptable to a Director of Occupational Hygiene (refer to the explanation of section 20). The resulting measurement will be important when establishing effective control measures to minimize worker exposure.

Informing the worker and records

Once measurements have been made, section 21 requires that any worker who may be affected by the harmful substance be informed of the measurement and the results. A hard copy of the measurement report must be available at the work site. Section 8 of the *OHS Regulation* requires the report to be in writing and available to affected workers. Both the employer and the prime contractor, if there is one, are responsible for ensuring this is done. Further, a record of the results must be maintained for at least three years from the date the measurement was taken. The results should be readily available for review by an officer or a Director.

Section 22 Worker overexposure

This section describes what needs to be done in the event that a worker is exposed to a substance in excess of its OEL. Steps must be taken immediately to prevent further exposure of the affected worker to airborne concentrations in excess of the OEL. The employer must also inform the affected worker of the nature and extent of the

exposure. This information should include the identity of the substance, its concentration, the duration of the exposure, the toxicological properties of the substance and its potential health effects. The source of emission causing the excessive exposure must be identified and controlled before work can resume.

If the work site has been required by Ministerial Order to have a joint work site health and safety committee, the employer must inform the committee of the incident and the steps taken to control the excess exposure. If there is a voluntary committee, then the employer should provide this information to it. If there is no committee, the employer should provide this information to workers at the work site.

Section 23 Worker decontamination

Workers, their clothing, and equipment may become contaminated during work activities through exposure to harmful substances including chemical or biological hazards. The employer is responsible for providing suitable means to allow workers to remove the contamination before leaving the work site.

The type of decontamination facility required depends on the harmful substance and the operation. Workers should be able to leave the work site without carrying away any amount of harmful substance that could adversely affect their health or the health of other persons with whom they have contact. For example, a worker doing lead soldering in a shop where lead particulate is produced must be provided with a suitable facility to change clothes and shower. The facility should have enough space for lockers so clean clothes can be kept separate from contaminated work clothes. As it relates to lead, there is significant potential for take-home lead exposure from lead contamination on a worker's skin, clothing and respirators. It is important that lead contamination be removed prior to the worker leaving the work site.

As the presence of a harmful substance on articles and clothing could adversely affect the worker's health, the employer must ensure that only properly decontaminated or cleaned articles and clothing are taken from the work site by the worker. The employer can determine whether to provide laundry facilities or some other means of cleaning the clothing. Articles may be wiped, washed or hosed down.

As it relates to biohazardous materials, it is recommended that employers develop and implement procedures that describe methods to clean, disinfect, or dispose of contaminated articles or clothing.

Section 24 Emergency baths, showers, eye wash equipment

Matching facilities to the hazard

The requirements of this section apply to any work site where chemicals harmful to the eyes or skin are used, not just chemical plants or laboratories. The employer is required to provide facilities so that chemicals splashed into the eyes or onto the body can be immediately diluted and washed away. Quick dilution and removal helps to minimize potential damage to the eyes, skin and body parts exposed to the chemical.

The facilities selected must be appropriate to the hazard and the extent to which workers are exposed to that hazard. For example, in a chemical processing plant where the potential exists for a worker to receive a chemical splash to the entire body, shower and eye wash stations must be provided. At another workplace where the hazard is limited to exposure of the eyes and face, an eye wash station may be sufficient.

Maintaining facilities

To be effective when needed, emergency baths, showers, eye wash and other similar equipment must be inspected and maintained according to the manufacturer's specifications.

Emergency baths, showers, eye wash stations and similar equipment should be

- (a) located on the same floor level and area as the work process that creates the hazard,
- (b) unobstructed at all times for quick access, and
- (c) marked with clear signage to indicate their location.

Recommended practices

The following recommended practices are not a mandatory part of the OHS Code , however meeting the requirements of the ANSI Standard described in the next paragraph are acceptable practices.

Employers and workers looking for additional information about emergency eyewash and shower equipment should refer to ISEA/ANSI Standard Z358.1-2004, *American National Standard for Emergency Eyewash and Shower Equipment*. The Standard establishes minimum performance requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person who has been exposed to injurious materials. It covers the following types of equipment: emergency showers, eyewash equipment, eye and face wash equipment, handheld

drench hoses and combination shower and eyewash or eye and face wash equipment. The Standard is intended to provide uniform minimum requirements for equipment performance, installation, test procedures, maintenance and training in order to assure the worker of a minimum level of first aid.

Section 25 Prohibited activities

An employer must not allow workers to eat, drink or smoke at the work site in an area contaminated by a harmful substance. Allowing such activities may result in the workers' health or safety being adversely affected.

If workers are allowed to eat, drink or smoke at a work site, a clean and hygienic area should be provided and maintained for these purposes. Even if workers eat, drink or smoke outside the work site, the employer must provide appropriate means for workers to decontaminate themselves to ensure they are not ingesting the harmful substance (see section 23).

Section 26 Codes of practice

General

A code of practice is intended to provide practical guidance, present safe work procedures and address issues specific to the hazard to which the code applies. Section 8 of the OHS Code requires that procedures be in writing and available to workers.

As required by section 33 of the *OHS Act*, the employer must ensure that

- (a) a copy of the code of practice is readily available to workers and other persons at the work site, and
- (b) all workers to whom the code of practice applies receive appropriate education, instruction or training regarding the content of the code of practice. Doing so helps workers comply with it.

Table 1 of Schedule 1 lists substances with high toxicity and a significant presence in Alberta. Where these substances are present at a work site in either a "significant" quantity or concentration, the employer is required to have a code of practice describing the storage, handling, use and disposal of the substance. The criteria defining "significant" are presented in subsections (1)(a) and (b) of section 26.

The handling of asbestos-containing material requires a code of practice. The "handling" could be abatement, application, maintenance, storage or disposal. For

consistency with Alberta Environment's waste management guidelines, Alberta Employment and Immigration does not consider a material containing less than 1 percent asbestos by weight to be an asbestos-containing material requiring specialized handling, removal and disposal practices. As a result, a code of practice is not mandatory for materials containing less than 1 percent asbestos by weight.

A code of practice should specify the following:

- (a) safe work practices for working with or near the substances;
- (b) preventative measures to be taken to prevent releases of the substance;
- (c) action to be taken in the event of a release;
- (d) protective equipment to be used by workers who work with the substance or in areas of the workplace where they may be exposed to the substance;
- (e) emergency procedures;
- (f) site contacts and emergency contacts;
- (g) decontamination procedures;
- (h) waste handling procedures; and
- (i) worksite monitoring requirements.

Processes involving substance

If a process listed in Table 1 of Schedule 1 is used at a work site, regardless of the quantity or concentration of the identified substance used in the process, the employer must establish a code of practice governing the operation of the process.

Uncontrolled release

If there is a possibility of uncontrolled release associated with a substance or a process identified in Table 1 of Schedule 1, the employer must establish a code of practice that documents the measures to be taken to prevent the uncontrolled release and the procedures to follow in the event of such a release.

Section 27 Storage of harmful substances

Although the labelling requirements for controlled products are discussed in Part 29 of the OHS Code, Workplace Hazardous Materials Information System (WHMIS), the term "harmful substance" has a broader definition than that of a "controlled product". Subsection (a) requires an employer to clearly identify harmful substances at a work site even if they are not controlled products or are controlled products exempt from WHMIS information requirements. For example, gasoline purchased from a gas station is considered a consumer product exempt from WHMIS information requirements. However, when the gasoline is taken to a work site, its container must be clearly identified.

Subsection (b) requires the employer to store harmful substances in a manner that does not present a hazard to workers. Information about storing such substances can be found in Material Safety Data Sheets (MSDSs) or will be information provided by the manufacturer.

Requirements specific to asbestos, silica, coal dust and lead

Section 28 General provisions for asbestos, silica, coal dust and lead

This section lists an employer's general obligations in cases where asbestos, silica, coal dust or lead are present at a work site. The requirements of sections 28 to 43 do not override or replace the more general requirements presented in sections 16 to 27.

An employer must minimize potential worker exposure to the substances by

- (a) minimizing their release to the air,
- (b) removing unnecessary accumulations of the substances, and
- (c) using proper decontamination methods to prevent the generation of airborne dust.

These requirements are intended to apply to all situations in which asbestos, silica, coal dust or lead is released into the air at a work site, regardless of airborne concentration. The requirements are not limited to "restricted areas" as defined in section 1 of the OHS Code.

Asbestos, silica and lead are substances for which a code of practice must be prepared under section 26 of the OHS Code. The use of the code of practice at the work site will allow the employer to meet the requirements of this section.

Section 29 Restricted area

This section lists requirements applicable only to restricted areas. By definition, these are areas where there is a reasonable likelihood that airborne concentrations of asbestos, silica, coal dust or lead will exceed their OELs. Restricted areas are therefore subject to additional conditions.

The employer is responsible for ensuring that the release of particulate is kept at a minimum by using ventilation, wetting to suppress dust, or other methods. An employer must provide workers in the restricted area with protective clothing that

prevents contamination of the other clothing they are wearing. The employer must ensure workers use the clothing provided.

It is also the employer's responsibility to ensure that workers do not take fibrogenic dust or lead particulate with them when leaving the restricted area. Section 23 already requires an employer to provide the facilities, including showers, that workers need to remove the contamination before workers leave the work site. Both the employer and worker have a duty to ensure that the worker is decontaminated prior to leaving the restricted area.

Section 30 Protective clothing used in restricted areas containing asbestos or lead

An employer is responsible for laundering clothing used by workers in a restricted area that contains asbestos or lead. This includes towels that are used for worker decontamination. The intent of the requirement is to centralize the laundering of contaminated clothing and prevent cross-contamination of street clothes with asbestos or lead. If re-usable protective clothing is to be worn in a restricted area containing asbestos or lead, it must be properly laundered before it is removed from the work site. Workers should be able to leave a work site without carrying away any amount of harmful substance that could adversely affect their health or the health of other persons with whom they have contact.

The handling of contaminated protective clothing during laundering could be harmful to workers if it is not done properly. During storage and transportation, all contaminated protective clothing must be in sealed containers that are clearly labelled to identify the contaminants. Workers must be warned not to inhale the dust during handling.

Section 31 Release of asbestos

The release of airborne asbestos poses a serious health risk. For this reason, the employer or prime contractor must take all necessary action to correct a condition in which there is a potential for releasing asbestos fibres.

For more information



<http://employment.alberta.ca/SFW/2988.html>

Alberta Asbestos Abatement Manual

Section 32 Prohibitions related to asbestos

Crocidolite asbestos may not be used in existing and new buildings. Where crocidolite is found in an existing building, it must be removed unless removal poses a greater hazard to workers. If removal is not possible or reasonably practicable and workers will not be exposed to crocidolite in the course of their usual work procedures, the implementation of a management plan may be acceptable. The employer must document the conditions and rationale to explain why the crocidolite cannot be removed. The management plan should include the elements outlined in Chapter 4 of the Alberta Asbestos Abatement Manual. If the building is to be renovated or demolished at a later date, the crocidolite will have to be removed at that time.

To prevent asbestos fibres from becoming airborne and then being inhaled by workers or contaminating a work site, the spray application of materials containing asbestos is prohibited. This is because of the hazards associated with spray application of asbestos products and also because these types of products tend to be friable i.e. easily crumbled with hand pressure. Friable asbestos poses a greater hazard since there is a greater potential of the product releasing fibres.

Section 33 Asbestos in air distribution systems

The purpose of this requirement is to limit the possibility of airborne asbestos entering air distribution systems or equipment and then posing a hazard to workers and other persons.

Section 34 Asbestos in building to be demolished

The purpose of this requirement is to prevent the release of asbestos fibres into the air during building demolition. More information on work practices related to asbestos removal prior to building demolition is provided in the Alberta Asbestos Abatement Manual.

More information

 <http://employment.alberta.ca/SFW/2988.html>

Alberta Asbestos Abatement Manual

Section 35 Encapsulation, enclosure or removal of asbestos

When a structure with asbestos-containing materials is being altered or renovated, the disturbance of the asbestos may result in the uncontrolled release of airborne fibres. To prevent this, the employer must ensure that the asbestos-containing materials are removed, encapsulated or enclosed. When deciding which of the corrective actions is most appropriate, consideration should be given to the condition of the asbestos, its location, function and the cost of the proposed method of controlling exposure.

Removal, encapsulation and enclosure are corrective measures that can be used separately or in combination. Removal completely eliminates the source of exposure and, as a result, offers a permanent solution. Enclosure and encapsulation are containment methods that do not remove the potential source of asbestos exposure. If asbestos-containing materials remain in place, a management plan will be required for the building.

Removal

Asbestos-containing materials are removed from the underlying surface and collected and placed in containers for disposal at an approved waste disposal site. This process is the most expensive control method in the short term and may require an interruption of building activities. Removal is a prerequisite for demolition of a structure containing asbestos-containing material.

Encapsulation

During encapsulation, asbestos-containing materials are coated with a bonding agent called a sealant. Sealants penetrate and harden the material and/or cover the surface of the material with a protective coating i.e. bridging sealants. Sealants are applied over the surface of the material using airless spray equipment at a low pressure setting. If a penetrating sealant is used, the person applying the product must ensure that it penetrates through the material to the underlying support. Bridging sealants must form a tough skin that can withstand moderate impact, be flexible and flame retardant, resist deterioration over time and be non-toxic. The encapsulant should meet the requirements of Canadian General Standards Board Standard CAN/CGSB-1-205-94, *Sealer for Application to Asbestos Fibre Releasing Materials*, or an equivalent standard.

Enclosure

Enclosure is the placement of a physical barrier between the asbestos-containing materials and the building environment. Drywall covering is an example of a type of acceptable enclosure. Since the asbestos is not removed, fibres will continue to be released and will accumulate behind the barrier. If the enclosure is damaged or entered for maintenance, these fibres may be released into the building environment.

Management plan

When asbestos-containing materials remain in place in a building, a management plan is needed. The plan should address the following;

- (a) amount and type of asbestos-containing materials in the building;
- (b) inspection frequency and procedures;
- (c) training requirements for maintenance workers and others who may come into contact with the materials or work near them;
- (d) procedures to be followed if the materials are damaged or in other emergency situations;
- (e) procedures to be followed if the condition of the materials change or work routines are altered;
- (f) notification procedures for building occupants; and
- (g) labelling of asbestos-containing materials.

For more information

Additional information about these methods and asbestos abatement in general can be found in the Alberta Asbestos Abatement Manual.


 <http://employment.alberta.ca/SFW/2988.html>
Alberta Asbestos Abatement Manual

Section 36 Notification of a project

Notification must be given to a Workplace Health and Safety regional office or the province-wide Contact Centre at least 72 hours before beginning the activities that may release asbestos fibres. The Contact Centre telephone number is 1-866-415-8690.

This notification must include the location of the work site, the start and completion dates and a description of the work to be performed. This is accomplished by completing and submitting the Asbestos Project Notification Form (Form ASB001) developed by Alberta Employment and Immigration. The form is available by contacting the Contact Centre or printing it from the Workplace Health and Safety Web site.

For more information

 http://employment.alberta.ca/documents/WHS/WHS-PUB_whs3910.pdf
Asbestos Notification Form

Notification is required for all high, moderate and low risk projects. Projects requiring notification normally involve operations having the potential to release fibres from asbestos-containing materials. Although Alberta Employment and Immigration requires notification of all asbestos abatement projects, the 72-hour notification requirement is flexible where it can be demonstrated that there is a need to carry out the work immediately.

An example of this type of situation would be the immediate removal of asbestos cladding on a ruptured pipe. Immediate action would be justified to prevent damage to the building. However, delays in construction schedules resulting from the discovery of asbestos would not be considered sufficient reason to reduce the notification period.

Types of projects that do not require notification include:

- (a) inspection of asbestos-containing materials as part of a management plan or asbestos assessment project;
- (b) sampling of asbestos-containing materials or potential asbestos-containing materials as part of an asbestos assessment project. Sampling must be done by trained personnel and in a manner that minimizes disturbance and damage to the asbestos-containing materials;
- (c) removal and replacement of small (30 square centimetres or less), manufactured asbestos products such as gaskets or valve packing;
- (d) short-term work in areas that contain non-friable asbestos-containing materials, but do not involve disturbing the asbestos-containing materials; and
- (e) transportation of asbestos-containing materials in a sealed container unless the materials are part of an asbestos abatement project.

In the above cases, employers must take precautions to ensure that asbestos fibres are not released. Moreover, these types of projects must only be carried out by competent workers and in accordance with the requirements of this Part. Work procedures must be developed and followed to prevent potential asbestos exposure.

For pre-planned routine maintenance work involving low risk activities, projects may be granted “extended project notification status” as long as an asbestos survey had been completed and adequately trained workers follow established safe work procedures. Extended notifications may be granted for up to one year, depending on the employer’s ability to plan in advance. It is expected that the work will be carried out in a manner that reflects the principles described in the Alberta Asbestos Abatement Manual.

Section 37 Asbestos worker course

This section requires all workers who work with asbestos, including the removal or abatement of asbestos, to receive training. Workers who will be working in a restricted area i.e. high risk asbestos abatement projects, must successfully complete an asbestos abatement course of at least two days duration. The course must be one that is approved by Alberta Employment and Immigration.

Approved courses require participants to become familiar with several regulations and understand their responsibilities and the responsibilities of their fellow workers, supervisors and regulatory agencies. Practical sessions focus on worker protection, set-up of the work area and safe work practices. Each course concludes with an examination requiring an 80 percent passing grade. Workers who pass the examination receive an Asbestos Worker card (course certificate). A list of training agencies accredited to provide asbestos worker training and issue Asbestos Worker cards is available on the Workplace Health and Safety Web site.

Asbestos Worker cards remain the property of Alberta Employment and Immigration and as such, can be revoked if a worker is found to not be competent or if the card is misused. Workers must have their original cards available at the work site at which they are working. An occupational health and safety officer may ask a worker to produce their original card plus appropriate identification.

Workers involved in moderate and low risk abatement projects are not required to complete a two-day asbestos abatement course and do not need an Asbestos Worker card. The training these workers receive must be appropriate to their level of involvement in the project and at least cover all the information presented in sections 5.2 or 5.3 of the Alberta Asbestos Abatement Manual. Training programs that include this information are considered to have met the requirements of this section. Training can be provided by a training agency or in-house by persons knowledgeable in the procedures and hazards associated with asbestos abatement.

For more information

 <http://employment.alberta.ca/SFW/2988.html>

Alberta Asbestos Abatement Manual

 www.hre.gov.ab.ca/documents/WHS/WHS-EP_asbestos_agencies.pdf

List of training agencies accredited to provide asbestos worker training and issue Asbestos Worker cards.

Section 38 Containment and labelling of asbestos waste

Asbestos waste must be stored, transported and disposed of in sealed containers. Containment prevents asbestos fibres from becoming airborne and presenting a hazard to workers. Containers of asbestos waste, as well as containers of asbestos products, must be labelled to indicate the presence of asbestos and its hazardous nature. Containers must bear a warning that the dust should not be inhaled. Typical labelling reads as;

“ Carcinogenic – Asbestos Waste – Do Not Inhale Dust”

Additional information about asbestos waste and safe work procedures involving asbestos abatement is presented in the Alberta Asbestos Abatement Manual. Alberta Environment has published guidelines for asbestos waste disposal which provide information regarding the transportation and disposal of asbestos waste.

For more information

 <http://employment.alberta.ca/SFW/2988.html>

Alberta Asbestos Abatement Manual

Section 39 Use of crystalline silica in abrasive blasting

This section requires employers to make a conscientious effort to examine the use of less harmful abrasives when abrasive blasting. Employers must take into account technical, economic and availability factors. This section does not ban the use of crystalline silica in abrasive blasting.

The following are legitimate considerations in accepting or rejecting a less harmful substitute:

- (a) *technical* – Can the substitute perform the same work and produce the same results as silica sand?

- (b) *economic* – Is the cost going to be a prohibitive financial burden to the employer?
- (c) *availability* – Is a sufficient supply of the substitute readily available?

Employers are expected to document their assessment of alternatives when deciding whether or not a silica substitute is reasonably practicable for a specific abrasive blasting job. Alberta Human Resources and Employment is not looking for a detailed study for every situation where silica sand is used, but will be expecting an honest assessment and justification if silica is used.

In highlighting the use of crystalline silica in abrasive blasting, Alberta Employment and Immigration recognizes

- (1) the hazardous nature of crystalline silica in its respirable particulate form,
- (2) that abrasive blasting breaks silica sand down to respirable sizes, and
- (3) process emissions are difficult to control.

The message to employers is this: “Use silica substitutes whenever you can. If you must use crystalline silica, understand your responsibilities and meet all regulatory requirements.”

Employers are reminded of the stringent regulatory requirements involving the handling of respirable crystalline silica in the workplace. Because of the low OEL for crystalline silica – respirable particulate: 0.1 milligrams per cubic metre for quartz vs 3 milligrams per cubic metre for particulate not otherwise regulated – the OHS Code’s comprehensive “restricted area” requirements apply, as does the need to have all workers wear respirators. Employers using crystalline silica for abrasive blasting are required to:

- (a) establish a code of practice for their operations;
- (b) ensure workers undergo required health assessments, paid for by the employer;
- (c) establish a respiratory protection program for the proper selection and use of respirators;
- (d) provide workers with and ensure they wear protective clothing and respirators;
- (e) minimize the release of crystalline silica particulate into the air, keeping worker exposure as low as reasonably practicable, and never exceeding the OEL;
- (f) keep the work site clear of any unnecessary accumulation of crystalline silica particulate and materials containing crystalline silica;
- (g) ensure that decontamination of workers and materials does not result in the release of airborne crystalline silica particulate;
- (h) provide a means of preventing contamination of workers’ street clothes;
- (i) ensure only authorized persons enter a restricted area;
- (j) post signs around restricted areas warning of hazards and ensure signs remain posted until the area is no longer restricted; and
- (k) ensure workers decontaminate themselves prior to leaving a restricted area.

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_ch059.pdf

Crystalline Silica in the Workplace

Section 40 Health assessment for workers exposed to asbestos, silica or coal dust

A worker exposed to asbestos, silica, coal or lead must have a health assessment within 30 days of becoming an “exposed worker” as defined in section 1. When hiring a worker to perform work involving exposure to these substances, the employer is responsible for knowing if the worker has received a health assessment in the last two years and it is the worker’s responsibility to inform the employer of the date of that assessment. The employer should get verification that the health assessment was performed by checking documents the worker has.

Health assessments must be done every two years after the first assessment as long as the worker continues to be an “exposed worker”. If at any time during the preceding two years a worker performed work that qualified him or her to be an exposed worker, an employer must ensure that the worker undergoes a health assessment unless the worker provides the employer with a written statement refusing it. It is the worker’s employer at the time the worker becomes an exposed worker who is responsible for ensuring that the health assessment is done.

Health assessment

The purpose of the health assessment is to provide the worker with a baseline health evaluation, providing an opportunity to detect early changes to the lungs. Periodic health assessments serve as a means of documenting changes that, compared to the baseline evaluation, may have occurred over time. This permits the early detection of changes and provides an opportunity to investigate the cause of the changes.

The health assessment for exposure to asbestos, coal and silica consists of health history information, a chest x-ray, a radiologist’s report, a lung function test and a copy of the physician’s interpretation and explanation of the health assessment. The history includes identifying the worker, employer, the worker’s previous work and non-work exposures to coal dust, silica, asbestos, or other dusts, indications of any respiratory disease, smoking history and the date on which the worker had their most recent chest x-ray and lung function test.

The chest x-ray consists of a single back to front (postero-anterior) view of the chest and needs to be interpreted by a radiologist and the report sent to a physician. Where diagnostic imaging facilities no longer maintain x-ray film, the digital imaging format of x-rays is allowed provided the imaging facility can print to film when requested. As well, the employer must have this included in the procedure for health assessments.

The lung function test, conducted by a pulmonary function technician, consists of forced vital capacity (FVC) and forced expiratory volume in the first second (FEV₁) test. The physician reviewing the health assessment must give a written interpretation of the results to the worker within 60 days of the health assessment. Physicians must keep the health assessment records for 30 years. Further details on medical monitoring are discussed in the Workplace Health and Safety Bulletins listed below.

For more information

 http://employment.alberta.ca/documents/WHS/WHS-PUB_ch019.pdf

Asbestos at the Work Site

 http://employment.alberta.ca/documents/WHS/WHS-PUB_ch059.pdf

Crystalline Silica in the Workplace

 http://employment.alberta.ca/documents/WHS/WHS-PUB_ch063.pdf

Coal Dust in the Workplace

The information obtained during a health assessment is confidential. The person having custody of the health assessment record is responsible for ensuring that the information is kept confidential. Only the worker and the health professionals who conducted the assessment have access to the information. If others require the information, including the worker's family physician, the worker must give written consent indicating to whom the information is to be given and the specific information that can be provided. Some larger employers have developed a Release of Information form for this purpose.

For the purposes of evaluating programs, assessment information can be released in grouped data provided that an individual cannot be identified. For example, if a job category has one worker, that worker's data should be included in a category with more workers. The purpose of evaluating programs is to identify the number of workers with abnormal tests and determine if the control program is effective.

Although a worker has the right to refuse a health assessment, the employer must not coerce, threaten or force a worker into refusing part or all of a health assessment.

The employer is responsible for paying for the health assessment and interpretation of the results. Every effort should be made to have the health assessment conducted during normal work hours. If the assessment takes place during the worker's hours of work, the worker's wages, salary or benefits cannot be deducted for the period of time the worker is being assessed. If travel to or from the assessment occurs during working hours, the worker's wages, salary or benefits cannot be deducted for this period of time. Other mutually agreeable arrangements can be made to have the health assessment done.

Section 41 Lead exposure control plan

The employer must develop and implement a plan to control lead exposure if workers are likely to be exposed to airborne lead concentrations above the occupational exposure limit for more than 30 days per year. An exposure control plan is also required if work site lead exposure results in elevated levels of lead in the bodies of workers. Lead can be ingested or inhaled as a dust or fume. Section 8 of the *OHS Regulation* requires that the plan be in writing and available to workers.


The intent of the plan is to ensure that employers have a system in place to minimize worker exposure at the work site. The plan includes identifying the presence of lead, determining the level of exposure and determining if the hazard is being controlled. It should include educating workers about the hazards associated with working with lead, written safe work procedures to control the hazard, and training workers in how to minimize exposure. If a ventilation system is in place to control lead concentrations for example, workers need to know how to properly operate the ventilation system.

Personal hygiene practices are important to the control of exposure. The plan must include having appropriate facilities so that workers can clean up prior to eating, drinking or smoking. As required by section 23, suitable changing facilities, showers or other appropriate means must be provided by the employer to ensure that workers' street clothing is not contaminated.

The plan must include health monitoring that includes health history information, a physical examination by a doctor and a blood test for lead. For information on the medical monitoring of workers for lead exposure, refer to the Workplace Health and Safety Bulletin listed below.

The plan must also include a record keeping and documentation system to track all of the information required. The overall program must be evaluated annually to ensure that the requirements have been met and to determine if any changes are needed.

For more information

 http://employment.alberta.ca/documents/WHS/WHS-PUB_ch061.pdf
Lead in the Workplace

Section 42 Lead — air monitoring

To determine if workers have the potential to be exposed to lead at a work site, an employer must perform a hazard assessment as required by section 21. Since lead can be ingested or inhaled as dust or fume, the assessment should focus on these routes of exposure. If surfaces are tested for lead, the guidelines provided in the Workplace Health and Safety Bulletin “Lead in the Workplace” may be used.

This section requires that monitoring be conducted on a “regular” basis. The frequency of monitoring at the workplace will depend on a number of factors. In general, monitoring should be done at least annually. However, it may need to be done more frequently if

- (a) lead exposure levels at the workplace tend to vary either due to the nature of the process or environmental conditions such as temperature, pressure and humidity,
- (b) new equipment or work processes are introduced to the workplace that may affect worker exposure levels,
- (c) work practices or procedures change, or
- (d) workers experience adverse health effects due to exposure.

For more information

 http://employment.alberta.ca/documents/WHS/WHS-PUB_ch061.pdf
Lead in the Workplace

Section 43 Medical monitoring for lead

If it is reasonably likely that a worker could receive significant exposure to lead, the employer must ensure that blood lead level testing is available to the worker and the worker is informed of the availability of the blood lead test. Significant exposure to lead can occur during work at firing ranges, radiator shops and electronic recycling facilities. The purpose of the health assessment is to provide a baseline measure of the worker’s health and should include a health history, physical examination and blood lead testing.

When hiring a worker, it is the employer's responsibility to require the worker to have a health assessment and it should be also offered to all workers involved in work that may result in elevated blood lead levels. Yearly testing is recommended.

Measuring the concentration of lead in the blood is one way of determining the amount of lead in the body from all exposures. It is the best available measure of recent lead absorption. Blood lead levels should be less than 1.5 micromoles per litre. A worker with a blood level of 2.5 micromoles per litre or greater or symptoms diagnosed as a result of lead exposure is considered to have lead poisoning. The physician performing the testing should explain the results of blood lead testing to the worker. The Director of Medical Services must be notified if a worker has a blood level of 2.5 micromoles per litre or greater. For more information refer to the Safety Bulletin shown below.

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_mg030.pdf

Notifiable Occupational Diseases - Information for Physicians.

Where the worker has lead poisoning, Alberta Employment and Immigration occupational health and safety officers, under the direction of the Director of Medical Services, can order the employer to remove the worker from further lead exposure. The Director of Medical Services is a staff member of Alberta Employment and Immigration, appointed by the Minister under section 5 of the *OHS Act*.

Female workers of childbearing age who are considering becoming pregnant should be monitored to safeguard the fetus from the harmful effects of lead. The blood lead level should be kept below 0.5 micromoles per litre to protect the fetus.

The employer is responsible for paying the cost of the health assessment and ensuring that an accredited laboratory conducts the analyses of blood lead tests.

Section 43.1 Controlling mould exposure

Mould is found almost everywhere in our environment. Mould needs the right combination of water, nutrients and a suitable temperature to grow. Moulds are often relatively harmless e.g. *Cladosporium* or common "leaf mould". Moulds can also be useful, as in the preparation of foods and medications. In other circumstances however, they may pose a health hazard.

The presence of mould at the work site does not mean that it is a hazard to workers. The first step in determining whether or not mould poses a hazard to workers is to conduct a hazard assessment as required by section 7. This may include a thorough assessment of the work space where the issue is or may be a concern. A request for a mould assessment is usually prompted by indoor air quality complaints, an uncontrolled water intrusion event or observed visible mould growth.

The requirement to control mould in accordance with section 9 is based on the results of the hazard assessment. Employers will need to control mould exposure when:

- (1) visible uncontrolled mould growth or elevated airborne mould concentrations (compared to a control area such as outdoors) are present, but cannot be immediately remediated. This may include situations where remediation is planned at a later date or the contamination is not readily accessible without significant damage to the building;
- (2) mould clean-up or abatement is actively being conducted in the building; or
- (3) workers are medically diagnosed as having adverse health effects consistent with mould exposure at the workplace, even though visible mould growth and/or conditions likely to support mould growth such as damp indoor conditions are not readily apparent.

The types of controls implemented — engineering, administrative or personal protective equipment — will be based on where mould is present and who may be affected by exposure. Note that the prevention of mould growth as a proactive step is the most effective way to manage potential mould hazards at a work site. Because mould spores can be found almost everywhere, the key to preventing mould growth is to limit the availability of water. This is done by keeping building materials dry. Mould cannot be effectively managed at a work site unless the conditions that created the initial mould growth are addressed.

For more information



http://employment.alberta.ca/documents/WHS/WHS-PUB_bh019.pdf

Best Practice – Mould at the Worksite