Practicum Report:

Teleflex Exposure Control Plan

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Letter of Transmittal

To: Thomas Curley, Director, Human Resources, Teleflex Inc.

CC: Doug Fletcher, Professor, Kwantlen Polytechnic University

From: Matthew Williams, Student, and Kwantlen Polytechnic University

Date: 23 March 2012

Subject: Letter of Transmittal

Please find attached the Exposure Control Plan (ECP) Report. The Report contains an organizational analysis of Teleflex Canada which was used to develop the ECP included in the appendices of the attached report designed for Teleflex Canada.

The report identifies the Designated Substances from among the numerous substances detected at Teleflex Canada in the Worker Exposure Assessment submitted by PHH ARC Environmental Inc. in 2010. The included ECP was developed using the analysis and Workplace Exposure Assessment Report to ensure that Teleflex Canada will be in compliance with WorkSafeBC Occupational Health and Safety Regulations, specifically sections 5.54 and 5.57, pertaining to Exposure Control Plans and Designated Substances.

Further, the report includes an outline on an ECP Training Program and Implementation Plan to ensure that the ECP is implemented easily and effectively into Teleflex Canada's existing Health and Safety Policies and Procedures.

If you have any questions or concerns regarding the proposed Exposure Control Plan or the associated training or implementation programs please do not hesitate to contact me at 604-626-7318 or by email at matthew.williams@kwantlen.net.

Executive Summary

Teleflex Canada is a market leading developer and manufacturer of hydraulic and thermal marine technologies, and seeks to produce high quality and innovative products while reducing waste and inefficiency; however, like most manufacturing companies Teleflex's employees are at risk of exposure to hazardous or Designated Substances.

Teleflex employs a nearly 350 people and utilizes a primarily Classical Managerial Strategy in managing them. Teleflex implements policies and procedures that clearly layout what is expected of employees, including health and safety regulations and policies. Though, Teleflex has many policies for maintaining safety and preventing exposure, a 2010 Worker Exposure Assessment Report resulting from air quality tests of Work Cells identified a number of potentially hazardous substances including Designated Substances in some Work Cells.

A hazard and risk analysis was conducted using the report and WorkSafeBC Regulations and guidelines pertaining to OHS Regulations sections 5.54 and 5.57, which outline the requirement for an ECP for Designated Substances no matter how low the risk of exposure. An ECP has been developed and included in Appendix J, and it is recommending that this ECP be implemented by Teleflex, as it identifies the Designated Substances present in work Cells, outlines work procedures and links to existing safety policies in order to comply with OHS Regulation and avoid possible penalties or persecution under the Workers Compensation Act.

In addition to the ECP it is recommended that Teleflex also implement the included training program, which provides training for employees with the greatest risk of exposure and their supervisors who would train them and ensure their compliance with the ECP. Production Workers would be the primary targets group for training but Manufacturing Supervisors, Engineers and members of the Joint Health and Safety Committee would also be included.

Implementing the ECP may primarily be an OHS compliance issue; however, benefits to its implementation include the possibility of reducing the WorkSafeBC Experience Rating Surcharge over time by reducing exposure related lost-time injuries. This could result in a NPV of $974.64, and an ROI of 33% over 5 years.

After submission of this report and the ECP implementation of this program would include review and approval of the EP by managers, communication of the ECP and its purpose to all employees, training the designated employees and an annual review of the policy to ensure it is properly maintained. Fully implementing the ECP, including training of all designated employees, could be completed by the end of April 2012.

Implementation of this ECP would ensure that Teleflex is in compliance with WorkSafeBC OHS Regulations, and provide due diligence on preventing exposure related injuries or illnesses.

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Introduction

Teleflex Canada Inc. is located in Richmond, British Columbia, and is a Division of Teleflex Marine a leading manufacturer of Hydraulic and thermal technologies for marine, transportation and military applications. Teleflex is committed to innovation and quality of its products and to the safety of its employees.

Teleflex has requested the development of an Exposure Control Plan in order to ensure it provides the safest possible workplace for its employees, and that it complies with WorkSafeBC safety legislation.

This report will outline the development an Exposure Control Plan and implement it in the organization. The following report will encompass a comprehensive organizational macro and micro analysis, product development, training design and implementation plan and product assessment including Return on Investment (ROI).

Situation Overview

Teleflex Canada Inc is a manufacturing company in Richmond, British Columbia. Teleflex is one of the leading manufacturers of Hydraulic and thermal technologies for marine, transportation and military applications.

In November of 2010 Teleflex Canada Inc. contracted PHH ARC Environmental Ltd. to conduct a Worker Exposure Assessment in order to assess the potential for worker exposure to hazardous chemicals in use by Teleflex Canada at the Richmond BC facility. The resulting Worker Exposure Assessment Report (2010), which is contained in Appendix A, identified the need for Teleflex to develop an Exposure Control Plan as per WorkSafeBC Occupational Health and Safety Regulation (OHSR) in response to the presence of certain designated substances particulate in their manufacturing facilities.

Teleflex Canada Inc has requested that an Exposure Control Plan (ECP) be developed in compliance with sections 5.54 and 5.57 of WorkSafeBC's OHS regulations (2012). In addition, to

the ECP they have requested an associated training program and an implementation plan as part of an overall Exposure control program in line with their Safety Policies.

Organizational Analysis

Teleflex Marine is a global manufacturing company with Divisions in the USA, Canada, Australia and Singapore. This organizational analysis focuses on the Teleflex Canada Inc. division in Richmond, BC (Teleflex Marine, 2012).

The organizational analysis is divided into a Macro and a Micro analysis. The Macro analysis focuses on the overall business strategy and functions at Teleflex, and the Micro analysis focuses on the Hazard Analysis and Risk Assessments.

Macro Situational Analysis

Strategy

Teleflex Canada Inc's Mission statement is:

"Through world class design, quality and manufacturing principles, we will deliver: Constant Innovation, Measured Performance, Continuous Improvement, Customer Service and Profitable Growth" (Teleflex Canada, 2012).

Teleflex's strategy is to be a market leading hydraulic and thermal technologies manufacture with a focus on quality, lean manufacturing and innovation (Curley, 2012). In pursuit of its strategy Teleflex has adopted lean manufacturing processes at its facility (Curley, 2012). Teleflex's lean manufacturing processes have developed from the Toyota Production System (TPS) which emphasises creating value for the customer through quality control and other value added processes, and by reducing waste and inefficiencies (Curley, 2012).

Teleflex is focused on innovation and has set the goal of being in the top 5% of companies developing market disrupting technology (Curley, 2012). Teleflex holds a number of patents in the industry, and continually encourages its engineers to identify and pursue innovative solutions and product designs (Curley, 2012).

Environmental Analysis

PEST Analysis with Elements of SWOT

Political	Economical
• Holds numerous product patents (Strength) • Unionized workforce (Weakness/Threat) • OHS Legislation (Weakness/Threat) • New Owner (Opportunity)	• Global Divisions (Opportunity/Strength) • Market Volatility (Weakness/Threat) • ISO 9001:2008 Certified (Strength) • Skilled Work Force (Opportunity/Strength)
Social	**Technical**
• Safety Conscious (Strength)	• Highly automated production (Strength)

Political:

Teleflex holds numerous product patents on innovative and market leading technologies which give Teleflex and edge over its competitors. Teleflex is a unionized workforce, through the Christian Labour Association of Canada (C.L.A.C.) which means approving new policies and procedures as well as other decision processes must include the union, which has the potential to complicate the implementation of new processes as the union must be consulted and agree to the changes. WorkSafeBC and other OHS Legislations must be complied with which requires additional effort on the part of Teleflex to ensure they are in compliance with the appropriate legislation. Finally, as Teleflex has recently been purchased by the equity investment firm H.I.G. Capital, though initial fears were that H.I.G. would sell Teleflex off in pieces, H.I.G. is interested in providing Teleflex the resources and opportunity to grow (Curley, 2012).

Economical:

Teleflex is supported by operations in the U.S.A., Australia and Singapore, has a skilled workforce of Engineers, Managers and Production workers which in conjunction with their ISO 9001:2008 certification and compliance ensures that Teleflex's products are innovative, high quality and add value to their customers. However, one of Teleflex's primary weaknesses is that its products are focused on the marine pleasure craft industry which is heavily tied to the economy, and its ups and downs.

Social:

Teleflex cares about the safety of its employees, and has implemented a number of health and safety policies to ensure that Teleflex provides a safe workplace in cooperation with its employees.

Technical:

Teleflex is a highly technological manufacturing plant with many processes being completed by manufacturing equipment, and given their focus on lean manufacturing they are open and quick to adopt new technologies provided that they add value to their products and customers.

Managerial Strategy

The overall Managerial Strategy at Teleflex is a combination of the Classical and Human Relations Managerial Strategies. The Production workers are managed with a Classical approach, and the Engineers require Human Relations approach which borders on High-Involvement at times do to their involvement in the innovation and design of new products. The Classical and human Relations Managerial Strategies employed by Teleflex in managing their employees is appropriate to the goals of the organization as identified in the comprehensive analysis below.

Production Workers

At Teleflex production workers are divided into two sub-categories of Direct and Indirect. The 195 Direct production workers are responsible for the direct manufacturing and operation of the production equipment in Teleflex's product manufacturing (Sunga, 2012). They are the workers who create the actual product for Teleflex (Sunga, 2012).

In addition to the Direct workers there are also 80 Indirect workers involved in the production of Teleflex's products (Sunga, 2012). The indirect workers are involved in the manufacturing process, but they are removed from the direct creation of the product. Indirect workers are supervisors, equipment maintenance and other support staff.

Production Worker Structural Variables:

Production Workers at Teleflex have a very Classical Managerial Strategy (Long, 2010).

Job Design: The jobs of Direct Production employees are very task oriented and require little thinking about the process as each work process is highly detail in written and pictorial references known as Standardized Work Instruction Sheets (SWs) (Sunga, 2012). These SWs are posted at each work station, and describe the step by step process for manufacturing a product at that station, how to operate the equipment and how much time each step of the process

should take. This is a strict and controlled process, which is falls under a classical managerial approach (Long, 2010).

Coordination and Departmentation: Teleflex has a strict and formalized organizational hierarchy. Direct and indirect production workers are employed within designated work cells or functions designed for the production of specific products, and they are accountable to their direct supervisors for coordination (Long, 2010).

Control: Control is exhorted upon direct and indirect production workers through Classical Managerial strategies such as constant supervision and productivity monitoring, and the implementation of rules, policies and procedures (Long, 2010).

Communication: Communication for direct and indirect production workers is very formal with strict chains of command. Communication is often vertically arranged with orders and instructions coming from the top down (Long, 2010), and if workers want to communicate upwards they must initiate communication with their immediate supervisor. This format of communication is aligned with a Classical Managerial Strategy (Long, 2010).

Decision Making and Leadership: Direct and indirect production workers have little or no ability to make decisions as their work requirements are clearly defined. Production Workers at Teleflex are unionized through the Christian Labour Association of Canada (C.L.A.C.), which acts as their bargaining authority and the Collective Agreement (2009) outlines clearly outlines their rights and entitlements. Changes to their work are communicated to them by their supervisors from management or through the union, as is common with a Classical Managerial Strategy (Long, 2010).

Reward System: Production Workers are paid an hourly base rate with the possibility for overtime (Collective Agreement, 2009). Production Workers work Monday – Friday during 1 of 3 shifts, which include:

- Day (1st shift) – 06:30 to 15:00 (8 hours);
- Afternoon (2nd shift) – 15:00 to 23:30 (8 hours); and
- Night (3rd Shift) – 23:30 to 06:30 (7 hours) (Collective Agreement, 2009).

Shift premiums are also paid for the afternoon and Night shifts (Wong, 2012). The afternoon shift is paid for 8.5 hours for an 8 hour shift, and the Night shift is paid 8.5 hours for a 7 hour shift (Wong, 2012).

As of September 2011, Teleflex Production Workers had a starting hourly wage of $15.35 per hour (Collective Agreement, 2009). With each additional year of employment Production Workers progress through the Pay Grade Levels until their hourly wage reaches $21.32 after 7 years (Collective Agreement, 2009). The majority of Teleflex Production workers are at the 7 year Pay Grade Level (Wong, 2012).

Benefits for Production Workers include 100% contribution for

- MSP Premiums;
- Extended Health and Dental programs;
- Employee Life Insurance; and
- Death and Dismemberment Insurance (Collective Agreement, 2009).

Manufacturing Supervisors

The Manufacturing Supervisors are indirect Production Workers responsible for overseeing the production process. They are part of the production workers, but they are considered management and are non-union. There are 4 Manufacturing Supervisors at Teleflex, covering the various production shifts. Manufacturing Supervisors are salaried non-union members who receive an average annual salary of $72,700 (Wong, 2012).

Engineers

Teleflex also employs 43 engineers in various positions including Design Engineers, Manufacturing Engineers and Quality Engineers (Sunga, 2012).

Design Engineers

Design engineers have the most latitude as they research and design the products manufactured by Teleflex in response to market needs and opportunities (Sunga, 2012). They developing new products and are provided with the opportunity to work on innovative

projects, and they focus on the innovation of market disrupting technologies. They are encouraged to think outside the box and find new materials to achieve the required results. They are required to work in both an office environment and on the production floor (Sunga, 2012).

Manufacturing Engineers

Manufacturing engineers overlook the manufacturing process. Manufacturing Engineers are responsible for developing, building and improving assembly and production equipment (Sunga, 2012). They seek new opportunities to improve efficiency and decrease waste in the manufacturing process, and are required to work in both an office environment and on the production floor in the performance of their duties.

Quality Engineers

Quality engineers support production and warranty product issues by improving processes and identifying inspection requirements for incoming materials and outgoing products. Quality Engineers maintain the quality standards required by Teleflex through engineering expertise (Sunga, 2012). They are required to work in both an office environment and on the production floor.

Engineer Structural Variables:

Given that the engineers at Teleflex are divided into 3 subcategories there may be some variation between job designs, but they do have many similarities. Overall engineers tend to fall into the Human Relations Managerial Strategy with some aspects of a High-Involvement Strategy (Long, 2010).

Job Design: Teleflex's engineers are required to think outside the box and seek innovative ways of developing new products or manufacturing processes or reengineering existing products and processes to increase customer satisfaction and value as well as improving quality and efficiency. In order to achieve this engineers are given additional resources, control and autonomy. The result is a job design that is a combination of the Human Relations and High-Involvement Managerial Strategies (Long, 2010).

Coordination and Departmentation: The engineers are divided into functional teams based on design, quality or manufacturing and then further divided into teams based on product or process. They are still included in Teleflex's formalized hierarchy and organizational chart with a structured reporting process as is common with the Human Relations Managerial Strategy (Long, 2010).

Control: Teleflex's Engineers are controlled externally through peers and teams, and formalized rules, procedures and business practices; however, the engineers due have intrinsic rewards for developing new technologies and being able to build upon tier skills through experimentation (Long, 2010). These combinations place engineers on the border between a Human Relations and High-Involvement Managerial Strategy (Long, 2010).

Communication: As with a Human Relations Managerial Strategy Teleflex's engineers use both formal and informal communication in their work processes as they are afforded more input into design decisions (Long, 2010).

Decision Making and Leadership: Engineers at Teleflex have a greater opportunity to participate in the design decision making processes, and interact with production workers in the manufacturing process in order to identify and correct issues. Engineers are also remain part of a formalized autocratic hierarchy in which they report to a supervisor, which is a more Human Relations approach, which means that engineers have a combined Human Relations Managerial strategy with some High-Involvement elements in relation to decision making and leadership (Long, 2010).

Reward System: Manufacturing, Quality and Design Engineers receive an annual Salary with the possibility for overtime (Collective Agreement, 2009). The Teleflex compensation policy is to pay employees the market median rate (Wong, 2012). The Collective Agreement (2009) sets a salaried employee minimum wage rate, which is $48,711.33 (level 7) for engineers; however, the average salary for engineers is $68,800. Teleflex conducts performance appraisals in April of each year to determine salary based on merit (Wong, 2012).

Benefits for regular full-time engineers include 100% contribution for

- MSP Premiums;
- Extended Health and Dental programs;
- Employee Life Insurance; and
- Death and Dismemberment Insurance (Collective Agreement, 2009).

Contextual Variables

Environment

Stability

Teleflex Canada Inc. was established in 1974 when Teleflex purchased Capilano Engineering Ltd.'s hydraulic steering business line, and has since established itself as a market leader in the competitive industry of manufacturing hydraulic and thermal technologies for marine pleasure craft and transportation (Teleflex Canada, 2012). They have competitors emerging in Asian markets; however, they have created a number of trusted market leading brands including SeaStar®, BayStar® and Proheat® which increases the stability of Teleflex's environment (Teleflex Canada, 2012).

Teleflex's desire to remain innovative and develop market leading and disrupting technologies has lead to the development and patenting of new market leading technologies including the market disrupting SeaStar® Optimus and Optimus 360 which allows for steer by wire control and the capability for forward, backward, axis rotation and lateral movement without the use of thrusters (Teleflex Marine, 2012). Teleflex's innovative sprit will help stabilize it in its environment.

The marine pleasure craft industry is dependent on the economy; when the economy is good people have disposable income to spend on luxury goods such as marine pleasure craft and when the economy is in decline luxury goods such as boats are one of the first markets to feel the pressure (Curley, 2012). Teleflex has survived numerous market fluctuations due to its resilience and ability to adapt; as production demand decreases it removes shifts from the production floor and as demand increases it adds shifts further stabilizing its position in its business environment.

The demands for hydraulic components is a stable market, even though aspects of Teleflex's business are focused on marine pleasure craft they have other customers in transportation and military markets which allow them diversify their client base during periods of instability. Additionally, though the designs and product aspects of Teleflex's environment may be unstable the manufacturing of the products is Stable, and overall Teleflex's environment is identified as a stable environment.

Complexity

Teleflex's business is focused primarily on the development and manufacturing of hydraulic components for marine pleasure craft and transportation with some variation for heating appliances such as the Modern Burner Unit (MBU). As the primary focus of Teleflex is primarily limited to the design and manufacturing of hydraulic steering components for marine pleasure craft Teleflex's complexity is determined to be Simple (Long, 2010).

Corporate Strategy

Teleflex maintains its focus on established base product lines which they excel at and through a focus on quality and adding customer value which is seen as a defender corporate strategy and it is in line with a classical managerial Strategy; however, in addition Teleflex seeks to identify, develop and exploit new product opportunities such as the Optimus 360 system which puts the falls under the Prospector Corporate Strategy (Long, 2010). Based on the combination of Defender and Prospector Strategies of the manufacturing and engineering functions of Teleflex the Miles and Snow Typology of Corporate Strategy Teleflex that best suites Teleflex is the Analyzer Corporate Strategy which combines the both the Defender and Prospector strategies (Long, 2010).

Technology

Thompson's Typology of Technology

Teleflex's production process can be best described as long-linked as each product is manufactured in sequential stages in production cells specialized in each stage of production, and the work in each cell is conducted but specific employees (Long, 2010). Long-linked technology is often associated with a Classical Managerial Strategy as used by Teleflex (Long, 2010).

Perrow's Typology of Technology

Focusing on Perrow's Typology of Technology classifications Teleflex uses Routine Technology, as the production process at Teleflex is highly standardized through the use of Standardized Work Instructions and structured quality control procedures for dealing with products that do not meet standards (Long, 2010). This strategy complements Teleflex's Classical Managerial Strategy (Long, 2010).

Woodward's Typology of Technology

The production and manufacturing process at Teleflex is focused on creating large quantities of their various processes in a standardized way in order to ensure quality. This form of manufacturing is known as mass/large batch technology under the Woodward's Typology, and it is consistent with the Classical Managerial Strategy employed at Teleflex (Long, 2010).

Size

Given that Teleflex employs approximately 350 employees it is a medium to large sized business and according to Richard Long (2010). With 275 employees the majority of Teleflex's employees, are either Direct or Indirect Production employees, and the next largest group of employees is the 43 engineers (Sunga, 2012). Larger firms, such as Teleflex often adopt a Classical Managerial Strategy in order to better coordinate and control their people (Long, 2010).

Workforce

The Direct and Indirect Production workers tend to fall under the low skills and education category; whereas the engineers fall under the moderate to high skill/education identified by Long (2010). The implications of this are that Teleflex must differentiate its Managerial Strategy when interacting with these two groups. The low skilled/educated production employees require a more Classical approach, and the engineers require a combination between a Human Relations and High-Involvement approach.

Cultural Analysis

Teleflex has a culture that encourages Innovation, Quality, Efficiency and Safety in the workplace. Many employees enjoy working at Teleflex because they enjoy their work, are treated fairly, work in a positive work environment and are kept informed on business operations and performance through Monthly Employee Talks, and an employee newsletter

called Flex Times which is distributed with payroll, in lunch rooms and via Email (Sunga, 2012). Many employees have left Teleflex only to return because they preferred the work environment at Teleflex.

Innovation

As discussed previously, Teleflex is focused on innovation. This is not limited to innovative products, but extends to include innovative work processes and techniques. Engineers are encouraged to develop new and market disrupting technologies such as the SeaStar® Optimus 360, but they are further encouraged to re-examine current products to seek to improve upon them (Curley, 2012). Additionally, all employees are encouraged to share their ideas for improving work processes that will lead to improved efficiency and reduce waste in order to add value to Teleflex's customers through Lean production (Curley, 2012).

Quality

Teleflex is committed to quality through rigorous quality control procedures. Teleflex employs a quality control department including quality engineers and analysts. Production workers and quality control employees screen and test Teleflex's products in order to identify any defects, if defects are found the products are tracked, if 3 products are found the products lines are quarantined and quality control teams begin assessing the manufacturing process in order to find and correct the issue.

As part of Teleflex's quality management strategy it received ISO 9001:2000 certification in 2002, which focuses on quality of products throughout the manufacturing process rather than the quality of the final product (Curley, 2012). Teleflex has maintained its ISO certification and know complies with the ISO 9001:2008 certification (Therrien, 2012).

Efficiency

Teleflex and its employees are committed to increasing customer value by increasing efficiency and decreasing waste through Lean Manufacturing principles (Curley, 2012). Teleflex operates on a just-in-time production principle, and it produces products in response to customer orders this allows it to keep storage and material costs to a minimum (Curley, 2012). Teleflex has sought opportunities to improve efficiency in all of its business practices, and has developed its

production cells in a manner that promotes efficiency through efficient layouts and placement of tools (Sunga, 2012). Teleflex invites employees to join its kaizen club, which is tasked with finding new ways to increase efficiency (Sunga, 2012).

Safety

Teleflex is focused on producing a safe working environment through safety policies and training. Teleflex requires that all employees and contractors go through a mandatory safety orientation briefing before beginning work at the facility. Teleflex employs a Joint Health and Safety Committee in order to communicate and develop safety policies and plans (Sunga, 2012). Teleflex provides safety equipment for their employees and will reimburse employees for certain safety equipment that they purchase on their own (Sunga, 2012).

Furthermore, Teleflex ensures that there is always a trained first aider in each of its buildings, and provides a first aid room fully stalked and alarmed so that opening the door to the first aid room will summon a first aid attendant and striking the first aid alarm button in the first aid room will summon all first aid attendants (Sunga, 2012). As part of the first aid process all first aid incidents, no matter how minor are, tracked in order to monitor safety in the workplace and employees are encouraged to seek treatment for all injuries including small cuts in order to prevent possible infection (Sunga, 2012).

ISO 9001:2008 also incorporates safety into its scope, in addition to its focus on quality assurance; however, ISO's focus on safety extends to the product and the overall effect that a workplace injury may reduce productivity or damage the product (Therrien, 2012). ISO certified processes focus on providing safety for workers for the benefit of the product, and any benefit to the worker is a by-product of the intended protection of the product (Therrien, 2012). There are no processes involved in an ISO certification that are intended to protect a product that will prevent exposure to an employee; however, ISO certification states that an ISO certification does not override the companies requirement to comply with the regulations of the community it operates in (Therrien, 2012).

Process Audits

Production Process

Teleflex's production process utilizes designated work cells for its manufacturing process.

Each stage of a product's manufacturing work process is divided into numerous specialized work Cells where production workers focus on specific manufacturing tasks outlined in the Work Cell's Standardized Work Instructions.

The Standardized Work instructions dictate the processes to be followed and the time required to complete each task. The Production Workers are trained on each step of the Standardized Work Instructions by a Supervisor or Cell Leader, and they sign the Standardized Work Instructions to acknowledge that they have been trained.

Work Place Monitoring

Teleflex has a workplace monitoring policy (2009) (Appendix B) which requires:

- A monthly walkthrough of the facility to identify any potential exposure to hazardous materials or substances and their potential exposure methods.
- An annual air quality test measuring for hazardous substances if there was a change in the area since the previous air quality test.
- Upon the addition or change of a production cell a walkthrough survey will be conducted to determine the presence of any hazardous materials or substances and their potential exposure methods.

See Appendix A for Teleflex`s Work Place Monitoring Policy (2009).

Direct Production Worker Hiring

All Direct production workers are first hired as temps through the Adecco Employment Agency. Initially, direct workers are only hired on a temporary basis; however, Teleflex has the option to hire them on full-time if they are satisfied with the Temp's performance (Sunga, 2012). Additionally, if a temp is employed by Teleflex for 6 months, they are automatically hired as a full-time employee (Sunga, 2012).

WHMIS Qualification/Training

Teleflex ensures that employees are trained or qualified in WHMIS. Employees such as engineers are put through an online training and testing program, and their completion is tracked by the HR department, which follows up with each engineer to ensure that the training has been completed.

Direct production workers receive their WHIMIS training from Adecco prior to commencing employment with Teleflex or they receive it elsewhere, but it is the responsibility of Adecco to ensure that all temp employees have WHIMIS training when they begin work at Teleflex.

Safety Orientation

All employees or contractors who are employed at Teleflex receive Safety Orientation Training, which includes information on:

- The Joint Health and Safety Committee
- Emergency evacuation
- First Aid
- WHIMIS
- Personal Protective Equipment
- The right to refuse work
- Hazard Awareness

The Joint Health and Safety Committee

Teleflex has implemented a joint health and Safety Committee

- Comprised of 5 management representatives, and 5 employee representatives
- The committee meets monthly, or as required
- Posts its meeting minutes on the Teleflex Intranet and the notice boards placed in the lunch rooms.
- Answers any questions or concerns of employees regarding safety.

Gap Analysis

Two gaps have been identified in Teleflex`s safety policy

Gap 1: WorkSafeBC BC Premiums

Teleflex is paying a surcharge on its experience rating surcharge. Teleflex is classified as a Light Industrial Equipment, Machinery, or Power Tool Manufacture (less than 500 lb.) (712018) (WorkSafeBC, 2011). In 2011 Teleflex`s base rate was calculated as $1.21 and it received an additional surcharge of 14.4% or $0.17, which means Teleflex`s health and safety record is below the average for its classification. As indicated by Table 1 Teleflex has historically paid a surcharge, but it is slowly shifting downward.

Table 1

Year	Calculation steps	% Adjustment	$ Value
2008	Base Rate		$ 0.94
	Experience Rating Adjustment	48.0% Surcharge	$ 0.45
	Net Rate		$ 1.39
2009	Base Rate		$ 0.89
	Experience Rating Adjustment	47.3% Surcharge	$ 0.42
	Net Rate		$ 1.31
2010	Base Rate		$ 0.96
	Experience Rating Adjustment	25.0% Surcharge	$ 0.24
	Net Rate		$ 1.20
2011	Base Rate		$ 1.22
	Experience Rating Adjustment	28.9% Surcharge	$ 0.35
	Net Rate		$ 1.57
2012	Base Rate		$ 1.21
	Experience Rating Adjustment	14.4% Surcharge	$ 0.17
	Net Rate		$ 1.38

(WorkSafeBC, 2007, 2008, 2009, 2010, 2011)

Teleflex will want to improve its safety record to decrease its WorkSafeBC premium surcharge rate through improved safety practices with the overall goal of achieving a discounted experience adjustment.

Gap 2: Exposure Control Plan

In 2010 Teleflex hired PHH ACC Environmental Ltd. to conduct a Worker Exposure Assessment and Report regarding the chemicals at Teleflex's manufacturing facility. The Exposure Assessment and Report identified a number of substances present in the form of particulate in the air. Many of these substances were identified as Designated Substances under the WorkSafeBC Regulation section 5.57and Teleflex is therefore required to have an Exposure Control Plan (ECP) in place in accordance with section 5.54 of OHS Regulations. As Teleflex does not currently have an ECP, it must design and implement an ECP in order to comply with WorkSafeBC OHS regulations.

Micro Analysis

The micro analysis focuses on the occupational health and safety aspect of Teleflex with a primary focus on the legislated requirement for an Exposure Control Plan (ECP)

Hazard Analysis

The hazard analysis below was conducted in order to identify information on the probable hazards of Designated Substances present at Teleflex and the potential for employee exposure (Kelloway & Francis, 2011).

Worker Exposure Assessment

In November 2010 Teleflex retained PHH ARC Environmental Limited to conduct an assessment of the exposure hazards to employees present in the work place as part of Teleflex's Workplace Monitoring Policy. PHH ARC Environmental Ltd. assessed the work environment and Teleflex's workers activities, and measured worker exposures over their 8 hour shifts (Worker Exposure Assessment Report, 2010).

The Worker Exposure Assessment Report (2010), contained in Appendix A was provided to Teleflex indicated that Teleflex employees were not at risk of overexposure to the chemicals in the workplace at the time of the assessment; however, the report did identify a number of the chemicals present in the workplace were considered Designated Substance under WorkSafeBC BC Occupational Health and Safety Regulations (OHS Regulations) section 5.57.

Designated Substances

WorkSafeBC BC OHS Regulations Part 5 section 5.57 outlines the regulations for defining and managing Designated Substances:

> 5.57 Designated substances
>
> (1) If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers:
>
> (a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen;
>
> (b) ACGIH reproductive toxin;
>
> (c) ACGIH sensitizer;
>
> (d) ACGIH L endnote.
>
> (2) If it is not practicable to substitute a material which reduces the risk to workers, in accordance with subsection (1), the employer must implement an exposure control plan to maintain workers' exposure as low as reasonably achievable below the exposure limit established under section 5.48.

(3) The exposure control plan must meet the requirements of section 5.54. (OHS Regulations & Related Material, 2012)

The American Conference of Governmental Industrial Hygienists (ACGIH) and the International Agency for Research on Cancer identifies potential hazards associated with exposure to various substances (OHS Guidlines Part 5, 2012). Substances with an ACGIH A1 or A2 rating are either confirmed (A1) or suspected (A2) as a carcinogenic substance, and substances with an IARC rating of 1, 2A or 2B are used when there is sufficient (1), limited (2A) or possible (2B) evidence that a substance is carcinogenic to humans (OHS Guidlines Part 5, 2012). The ACGIH also identifies substances considered Sensitizers (S) for their have sensitization effects on humans, and Reproductive Toxins (R), which are substances may cause damage to a fetus or reproductive organs in humans (OHS Guidlines Part 5, 2012).

Designated Substance Analysis

The Worker Exposure Assessment Report (2010) identifies all the substances identified through exposure testing; however, not all substances are considered Designated Substances.

In order to determine which substances are considered Designated Substances under OHS Regulations section 5.57 the WorkSafeBC BC website provides an extensive Table of Exposure Limits for Chemical and Biological Substances (2011), which identifies the 8 hour Total Weighted Average (TWA) exposure limits for each substance, and identifies if a substance is identified as an ACGIH or IARC Carcinogen, Sensitizer and/or Reproductive Toxin. All substances identified in the Worker Exposure Assessment Report were cross-referenced with the Table of Exposure Limits for Chemical and Biological Substances (2011) in order to determine if they met the required conditions of Designated Substances.

Table 2 identifies the substances identified by the Worker Exposure Assessment Report which are also considered Designated Substances in accordance with OHS Regulations section 5.57 and the Table of Exposure Limits for Chemical and Biological Substances (2011).

Table 2

	Substance	Classification	ACGIH	IARC
1	Arsenic	Metal Particulate	A1	1
2	Benzene	Chemical	A1	1
3	Beryllium	Metal Particulate	A1, S	1
4	Cadmium	Metal Particulate	A2	1
5	Carbon Monoxide	Chemical	R	
6	Coal Tar Pitch Volatile (CTPV)	Metal Particulate	A1	1
7	Cobalt	Metal Particulate		2B
8	Ethyl benzene	Chemical		2B
9	Formaldehyde	Chemical	A2, S	1
10	Lead	Metal Particulate	R	2A, 2B
11	Manganese	Metal Particulate	R	
12	Nickel	Metal Particulate	A1	1
13	Oil Mist, Mineral, Severely Refined	Metal Particulate	A1	1
14	Titanium Dioxide	Metal Particulate		2B
15	Toluene	Chemical	R	
16	Vanadium Pentoxide	Metal Particulate		2B

ACGIH A1 and A2; IARC 1, 2A and 2B = Carcinogens
R = Reproductive Toxin;
S = Sensitizer

Note: Oil Mist, Mineral, Severely Refined is in the Worker Exposure Assessment Report (2010), and is identified as an ACGIH A1 and IARC 1 substance in the Table Exposure Limits (2011); however, there are no MSDSs available for this substance. In a teleconference a WorkSafeBC Hygiene Officer mentioned that it is likely that the substance has been replaced since the assessment was completed in 2010, and if no substances present in that cell are required to be in the ECP, it can be omitted, and investigated further during the next exposure assessment (Irving, 2012). An analysis of substances used in the SeaStar® Assembly Work Cell (the location this substance was detected) identified 2 substances; SeaStar Steering Fluid and Vibra-TITE, neither of which are consider Designated Substances (SeaStar Steering Fluid MSDS, 2012) (Vibra-TITE MSDS, 2010). The broad definition of Oil Mist, Mineral, Severely Refined makes it difficult to provide detail regarding the substance, and it has been left out of the ECP.

Exposure Control Plan

The presence of Designated Substances at Teleflex require an Exposure Control Plan in accordance with the OHS Regulations Part 5 section 5.57 paragraph (2), which states that:

> (2) If it is not practicable to substitute a material which reduces the risk to workers, in accordance with subsection (1) [Designated Substances], the employer must implement an exposure control plan to maintain workers' exposure as low as

> reasonably achievable below the exposure limit established under section 5.48. (OHS Regulations Part 5 section 5.57, sub-paragraph 2)

The Worker Exposure Assessment Report (2010), and OHS Regulations Part 5 section 5.57 paragraph (2) (2012) both identify the need for an ECP despite the indicate levels of Teleflex being well below the 8 hour TWA due the hazardous nature and potential effects of Designated Substances.

Introduction of Hazardous Material

Teleflex is continuously updating its products through changing production methods and materials as part of its strategy to increase efficiency, product quality and innovation. This changing environment will require Teleflex to introduce new materials and substances into the workplace, which have the potential to increase the risk of exposing employees to potentially hazardous or designated substances.

Risk Assessment

The risk assessment focuses on the probability of worker exposure to Designated Substances through the course of an employee's 8 hour shift (Kelloway & Francis, 2011).

History of Exposure Related Injuries

Teleflex has had 2 exposure related lost time injuries in the past 5 years (Wong, 2012).

The most recent occurred on the 25th of March 2010, a Production Worker reported a rash, dry skin, swelling and bleeding on his hands (Wong, 2012). The worker received first aid treatment, consulted a physician, and submitted a WorkSafeBC BC claim for Contact Dermatitis (Wong, 2012). The claim was accepted by WorkSafeBC BC, and resulted in 5 days of lost time (Wong, 2012).

The prior exposure related injury occurred on the 27th of September 2010, when a Production Worker reported dizziness, an itchy throat and coughing (Wong, 2012). Consultation with a physician resulted in WorkSafeBC BC accepting a claim for a temporary toxic reaction to airborne vapours resulting from exposure to toxic fumes (Wong, 2012). This claim resulted in 3 days of lost time (Wong, 2012).

The cases were minor, and the substance resulting in the exposure related illnesses in both cases is unidentified, but they do illustrate the potential for lost time injuries from exposure to substances Designated or otherwise, and they would have had an impact on Teleflex's WorkSafeBC BC Premium Experience Rating Adjustment.

Affected Work Cells

The Worker Exposure Assessment (2010) identifies the substances detected in the workplace, levels detected for each substance, the 8 hour TWA in ppm or mg/m³, and the location that the substances were detected.

The 8 hour Time Weighted Average (TWA) is established by ACGIH, and indicates the maximum concentration of a substance in the air that an employee can be exposed to over an 8 hour work period (OHS Guidlines Part 5, 2012). If a worker's designated work period is in excess of 8 hours the 8 hour TWA must be reduced by multiplying the 8 hour TWA limit by the factors outlined in OHS Regulations Part 5 Section 5.50 or in Table 3

Table 3

Factor	Length of work period (in hours)
0.7	more than 8, but not more than 10
0.5	more than 10, but not more than 12
0.25	more than 12, but not more than 16
0.1	more than 16

(OHS Guidlines Part 5, 2012)

As identified in Teleflex's organizational macro analysis, Teleflex workers normal working hours are set at an 8 hour shift or less, not including their lunch which is not counted in the 8 hour TWA, as employees are presumed not be exposed to Designated Substances in the lunchroom during their 30 minute meal breaks (Collective Agreement, 2009). In the event that an employee is required to work overtime beyond the standard 8 hour shift supervisors will need to account for the reduction in the 8 hour TWA limits as identified in Table 3.

Table 4 identifies the locations each Designated Substance was detected and the levels detected during the 2010 Worker Exposure Assessment in comparison with the maximum 8 hour TWA (Table of exposure limits , 2011) (Worker Exposure Assessment Report, 2010).

Table 4

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m³)	Results at Last Test (mg/m³)
Trim Sender Assembly Area	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	<0.00007
	Nickel	A1	1	0.05	<0.0004
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005
Proheat Electronics	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m³)	Results at Last Test (mg/m³)
	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	<0.00007
	Nickel	A1	1	0.05	<0.0004
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005
Welding Burlytic Area	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m³)	Results at Last Test (mg/m³)
	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	0.00049
	Nickel	A1	1	0.05	0.0017
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005
Bldg 3 Grinder Area	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
	Carbon Monoxide	R		25	1
Proheat and Test Bench	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m³)	Results at Last Test (mg/m³)
	Coal Tar Pitch Volatile (CTPV)	A1	1	0.2	0.052
	Oil Mist, Mineral, Severely Refined	A1	1	1.0	<0.11
Paint Room	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
	Benzene	A1	1	0.5	<0.0068
	Ethyl benzene		2B	20	0.015
	Toluene	R		20	<0.029
BayStar® Ejection Molder	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
	Formaldehyde	A2, S	1	0.3	0.0024

Risk to Personnel

The Teleflex employees with the greatest risk of exposure are the Production Workers who are in continuous daily contact with the Designated Substances throughout their 8 hour shift in the Work Cell locations identified in Table 3 (Kelloway & Francis, 2011). Additionally, Manufacturing, Quality and Design Engineers are occasionally required to work in the identified Work Cells in the performance of their jobs; however, their risk is reduced due to their occasional frequency of exposure to the Work Cells (Kelloway & Francis, 2011).

In comparing the measured results of the Designated Substances in the Work Cells to the 8 hour TWA in Table 2 the risk of exposure can be assessed as low. All measured Designated Substance levels are well below the 8 hour TWA, and well below the 50% of the 8 hour TWA exposure limit. Additionally, a survey of the Work Cells did not reveal any direct contact with the designated Substances in any processes as the Designated Substances identified in the Worker Exposure Assessment Report (2010) are from airborne particulate likely resulting from small quantities of Designated Substances being present in small quantities in other chemical substances utilized by Teleflex, or from previous use of Designated Substances prior to the substance being replaced with substances that reduce the risk to workers as recommended by OHS Regulations section 5.57 sub paragraph 1 (2012).

Routes of Entry

There are four major routes of entry that a substance can enter the human body:

- Absorption;
- Inhalation;
- Ingestion; and
- Injection.

Reviewing the MSDSs for the Designated Substances at Teleflex identifies the primary routes of concern for exposure risk at Teleflex are:

- Absorption;
- Inhalation; and
- Ingestion.

The primary methods of protection against the 3 routes of entry utilized by Teleflex include Engineering, Administrative and Personal Protective Equipment (PPE) controls.

Engineering Controls

The primary method of engineering controls available to Teleflex is ventilation in all production work cells. In most cases the ventilation is connected to the production equipment and is constantly and automatically in operation provided power is supplied to the equipment (Pehl, 2012). This reduces the chance of employees failing to use the proper ventilation, and decreases the risk of exposure.

The preheat electronics shop utilizes adjustable ventilation/exhaust arms which can be adjusted into position as required by the working performing soldering operations (Pehl, 2012). The ventilation/exhaust is constantly in operation, but must be adjusted into position by the operator.

The welding Burylitic area utilizes portable filtered ventilation units which must be activated before use, and the filtration systems must be maintained (Pehl, 2012). The ventilation intake can be adjusted by the operator.

The paint room uses an enclosed room with fitted ventilation to contain the risk of exposure to a limited area, and access is restricted to employees in the performance of their duties (Pehl, 2012).

Administrative Controls

Teleflex uses administrative controls to reduce the risk of exposure to employees through training, exposure assessments, workplace monitoring and in some cases medical screening (Kelloway & Francis, 2011).

Teleflex trains all workers in the initial safety orientation training provided to all new temporary and full-time employees, as well as routine refresher training.

Regular Worker Exposure Assessments are conducted by Teleflex with the last 2 having been conducted in 2010 and 2007, and another one due this year (Sunga, 2012).

Workplace monitoring walkthroughs are scheduled for each building of Teleflex's production facilities on a monthly rotating basis (Sunga, 2012). Reports are submitted to supervisors and the Plant Manager on completion for action on any deficiencies.

Finally, Teleflex does provide employees with medical services and screening through "Medisys" Health Management Group (Respirator Protection Program, 2009). These services may be provided in a situation where exposure has or is suspected of occurring, or if symptoms of an exposure related condition occur.

Personal Protective Equipment (PPE) Controls

Teleflex currently has a number of safety policies and notices regarding the use of PPE. These policies are discussed in the Existing Safety Policies and Programs section, but include the mandatory use of Safety glasses and Safety boots in all Work Cells as well as other PPE if desired.

Existing Safety Policies and Programs

Teleflex has a number of pre-existing policies and programs which have been implemented in order to comply with OHS Regulations and decrease worker exposure and injury risks. Many of these policies can be incorporated into, or linked to the ECP.

Controlled Forms (CF)

Teleflex has Controlled Forms which are used to collect and track information from employees.

Job Training Progress – CF085:

The Job Training Progress form (2010) in Appendix C is used by Teleflex to track the training of employees in various aspects of their employment. It includes a section for Safety/Hazards training, which could be expanded to include the ECP, as this would allow Teleflex to track employees that have received the ECP training (Job Training Progress Form, 2010).

Accident/Incident Investigation Report – CF151:

Teleflex tracks every accident or incident at its facility through the Accident/Incident Investigation Report (2009) in Appendix D. Each case is investigated by a supervisor, Employee Services representative and possibly a team leader. The report is used to initiate a WorkSafeBC

claim. Once complete it is held by Employee Services for 7 years before being archived (Wong, 2012).

Hazardous Material Introduction – CF231:

Teleflex is developing a draft Hazardous Material Introduction Controlled Form (CF231) (2011). The CF231 can be linked to the ECP in order to help supervisors and the Joint Health and Safety Committee to ensure that the ECP is up to date with hazardous materials that employees may be exposed to through the review of CF231 for all newly introduced substances.

Note: The form cannot be attached to this document as it is a draft, and has not been approved for distribution (Sunga, 2012).

Controlled Documents (CD)

In addition to Controlled Forms Teleflex uses Controlled Documents which provide information to employees on policies or procedures.

Hand Protection Policy – CD113

Teleflex's Hand Protection Policy contained in Appendix E outlines the requirements or restrictions for the use of various hand protection equipment offered by Teleflex (Teleflex Hand Protection Policy, 2007), as hand injuries are the primary injury experienced by Teleflex Employees (Wong, 2012). The policy also identifies the criteria for the selection of the appropriate hand protection based on the type of work being completed and the potential substances or materials being worked with (Teleflex Hand Protection Policy, 2007).

Workplace Monitoring Policy – CD138

Teleflex's Workplace Monitoring Policy, identified in Appendix A, outlines Teleflex's responsibility to mitigate the exposure of employees to hazardous materials. The Policy also outlines the frequency and application of workplace monitoring.

Wearing Safety Glasses Policy – CD148

The Safety Glasses Policy (2011) in Appendix F requires all Teleflex employees to wear their safety glasses in designated areas of the production facility such as Work Cells. The policy identifies the proper wearing of safety glasses and that failure to comply with the Safety Glasses policy will result in disciplinary actions (Wearing Safety Glasses Policy, 2011).

Dress Code – CD134

Appendix G contains Teleflex`s Dress Code (2009). The dress code outlines the expected dress for all employees, including the requirement for production workers to Steel toed boots, safety glasses and visibility vests (Dress Code, 2009). The Dress Code (2009) also outlines the provision of coveralls or lab coats to full-time hourly production employees.

Teleflex does provide laundry service through a contracted laundry company on a weekly basis for employees (Sunga, 2012). This service will reduce the risk of employee exposure to possible contaminants on the coveralls or Lab coats.

Eating or Open Food within the Manufacturing Facility and Laboratories – CD135

Teleflex`s Eating and Open Food Policy (2009), contained in Appendix H, is directed towards reducing the possibility of exposure through ingestion by reminding employees to consume food in designated areas. Consuming or storing food in production areas can result in contamination through ingestion of substances which may come into contact with food or drink, and it reduces the risk of food or drink damaging or contaminating production processes or equipment (Eating or Open Food within the Manufacturing Facility and Laboratories, 2009)

Respirator Protection Program

In order to reduce risk of exposure through the inhalation of hazardous substances Teleflex has instituted a Respirator Protection Program (2009) (Appendix I). The program identifies the Work Cells which require the use of a respirator, such as the Paint Room, and areas were employees can elect to wear a respirator (Respirator Protection Program, 2009). The program outlines the approved respirators that may be provided, as required, by Teleflex, including the TC-19C and TC-21C Respirators.

Risk of Non-Compliance

Another risk to Teleflex is the risks of not complying with WorkSafeBC's OHS Regulations considering Designated Substances and the requirement for an Exposure Control Plan (ECP) (OHS Regulations & Related Material, 2012). The Worker Exposure Assessment Report (2010) has identified that Teleflex requires an ECP in order to comply with OHS Regulations regarding Designated Substances, and a failure to implement an ECP despite this warning could result in Administrative Penalties or Levees imposed on Teleflex by WorkSafeBC in accordance with the Workers Compensation Act (WCA).

Administrative Penalties

WorkSafeBC BC is empowered through the WCA Part 3 Division 12, Section 196 (2012) to impose Administrative Penalties on Teleflex for the following:

> 196 (1) The Board may, by order, impose an administrative penalty on an employer under this section if it considers that
>
> (a) the employer has failed to take sufficient precautions for the prevention of work related injuries or illnesses,
>
> (b) the employer has not complied with this Part, the regulations or an applicable order, or
>
> (c) the employer's workplace or working conditions are not safe.
>
> (2) An administrative penalty which is greater than $565 329.86 must not be imposed under this section.
>
> (3) An administrative penalty must not be imposed under this section if an employer exercised due diligence to prevent the circumstances described in subsection (1). (Workers Compensation Act, Part 3 Division 12, Section 196, 2012)

Administrative Penalties are fines imposed on an employer for violations of the WCA or OHS Regulations (WorkSafe BC Penalties, 2012). Violations can include failure to provide a safe workplace, failure to comply with the WCA or OHS Regulations, and/or failure to take preventative precautions (WorkSafe BC Penalties, 2012). Administrative penalties can vary greatly depending on the severity of the incident, the size of the organization, and previous administrative penalties imposed on the organization (WorkSafe BC Penalties, 2012).

WorkSafeBC BC publicly posts the penalties it imposes on organizations online at www.worksafebc.com by industry sector (WorkSafe BC Penalties, 2012).

The Administrative Penalties for the manufacturing sector for exposure related incidents ranged from a fine of $5,000 imposed on Planit Industries & Research Ltd., in Feb of 2010, for failure to provide written safe work procedures for exposure to hazardous chemicals (WorkSafe BC Penalties, 2012) to a fine of over $38, 000 imposed on Sealum Industries Ltd., for exposing workers to tobacco smoke and not providing workers with information, training and supervision to ensure their safety (WorkSafe BC Penalties, 2012). These fines represent a range of possible penalties that Teleflex could receive for failing to provide workers with an ECP; however, Administrative Penalties cannot exceed $565,392.86 (Workers Compensation Act , 2012).

Implementing an ECP, despite the low risk of exposure, would ensure that Teleflex is in compliance with the OHS Regulations, provide a safer work environment, and implement sufficient precautions which will protect Teleflex from Administrative Penalties as outlined above.

Levy from employer to cover amount of compensation

In addition to Administrative Penalties WorkSafeBC BC may collect a Levy from employers if a WorkSafeBC BC claim is accepted, and it is determined that WCA Part 1 Division 5, Section 73 applies as outlined below:

> 73 (1) If
>
> (a) an injury, death or disablement from occupational disease in respect of which compensation is payable occurs to a worker, and
>
> (b) the Board considers that this was due substantially to
>
> (i) the gross negligence of an employer,
>
> (ii) the failure of an employer to adopt reasonable means for the prevention of injuries, deaths or occupational diseases, or
>
> (iii) the failure of an employer to comply with the orders or directions of the Board, or with the regulations made under Part 3 of this Act,
>
> the Board may levy and collect from that employer as a contribution to the accident fund all or part of the amount of the compensation payable in respect of the injury, death or occupational disease, to a maximum of $49,498.45. (Workers Compensation Act, Part 1 Division 5, Section 73, 2012)

Designated Substances are so designated, in part because exposure to them can result in the development of occupational diseases such as cancer. Implementing an ECP at Teleflex will reduce both the chance of a worker developing an occupational disease through exposure, and the potential for levees as it provides a reasonable means for preventing injuries, occupational disease and death as a result of exposure to Designated Substances present in the workplace (Workers Compensation Act , 2012).

Prosecution for Offences

In addition to the Penalties that can be imposed, WorkSafeBC can also chose to persecute a responsible individual in accordance with WCA Part 3, Division 15, Section 213 (2012) as outlined below:

> 213 Offence to contravene Part, regulation or order
>
> (1) A person who contravenes a provision of this Part, the regulations or an order commits an offence.
>
> (2) If a corporation commits an offence referred to in subsection (1), an officer, director or agent of the corporation who authorizes, permits or acquiesces in the commission of the offence also commits an offence.
>
> (3) Subsection (2) applies whether or not the corporation is prosecuted for the offence.
>
> (Workers Compensation Act, Part 3 Division 15, Section 213, 2012)

Conviction of an offence under WCA Part 3, Division 15, Section 213 (2012) can lead to penalties including fines, imprisonment or both as outlined in WCA Part 3, Division 15, Section 217 (2012) below:

> 217 General penalties
>
> On conviction for an offence, a person is liable to the following penalties:
>
> (a) in the case of a first conviction,
>
> (i) a fine of not more than $652 774.38 and, in the case of a continuing offence, to a further fine of not more than $32 638.75 for each day during which the offence continues after the first day,
>
> (ii) imprisonment for a term not exceeding 6 months, or
>
> (iii) both fine and imprisonment;
>
> (b) in the case of a subsequent conviction,
>
> (i) a fine of not more than $1 305 548.74 and, in the case of a continuing offence, to a further fine of not more than $65 277.44 for each day during which the offence continues after the

first day,

(ii) imprisonment for a term not exceeding 12 months, or

(iii) both fine and imprisonment. (Workers Compensation Act, Part 3 Division 15, Section 217, 2012)

Prosecution by WorkSafeBC under the WCA is a deterrent against individuals disregarding the OHS Regulations or the WCA. Employees, particularly, supervisors will need to be aware of the possible repercussions of failing to comply with the regulations and the ECP.

Product

In order to meet and comply with WorkSafeBC BC OHS Regulations and the WCA it is recommended that Teleflex implement the Exposure Control Plan (ECP) developed, as identified below, and contained in Appendix J of this report.

Exposure Control Plan Development

The ECP in Appendix J was developed in accordance with the outline provided by OHS Regulations Part 5 section 5.54 (2012):

> 5.54 Exposure control plan
>
> (1) An exposure control plan must be implemented when
>
> (a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit,
>
> (b) measurement is not possible at 50% of the applicable exposure limit, or
>
> (c) otherwise required by this Regulation.
>
> (2) The exposure control plan must incorporate the following elements:
>
> (a) a statement of purpose and responsibilities;
>
> (b) risk identification, assessment and control;
>
> (c) education and training;
>
> (d) written work procedures, when required;
>
> (e) hygiene facilities and decontamination procedures, when required;
>
> (f) health monitoring, when required;
>
> (g) documentation, when required.
>
> (3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable. (OHS Regulations, Part 5, section 5.54, 2012)

OS Regulations Part 5, section 5.45 paragraph (2) (2012) provided the basic outline for the headings of the ECP, and guidance on the information required to be included in the ECP (OHS Guidlines Part 5, 2012).

A number of ECP documents were also researched and utilized in order to develop the concepts and wording of the ECP, as the OHS Regulation Guidelines provided only minimal assistance in the minimum requirements of an ECP, including an ECP for Designated Substances from British Columbia`s Institute of Technology (BCIT) (2011) and McMaster University`s Designated

Substances Control Program (2003). In addition to the ECPs the MSDSs for the 15 Designated Substances identified at Teleflex were used in the development of the control procedures and health effects of each substance in the ECP.

The ECP designed for Teleflex was designed to be one document covering all Designated Substances in Teleflex`s workplace rather than an individual document for each Designated Substance. This was done to keep the documentation to a minimum. The ECP design takes a Macro and a Micro approach. The macro component of the ECP covers information that is common to all Designated Substances identified by the Worker Exposure Assessment Report (2010) such as:

- The Objective of the ECP;
- Roles and Responsibilities;
- Assessment and Monitoring;
- Education and Training;
- Hygiene and Decontamination;
- Documentation;
- Non-Compliance; and
- ECP Review.

The micro component of the ECP document includes sections for:

- Designated Substances, which is subdivided by individual Designated Substances which includes:
    - Risk identification; and
    - Health Effects of each substance

- Risk Identification sections, which identify:
    - location of substances;
    - the 8 hour TWA for each substance;
    - the quantity of a substance detected at the most recent exposure assessment; and
    - the exposure control measures to be used by workers in identified work cells.

The micro sections of the ECP have been placed in the Appendices of the ECP to allow for customization of hazardous substances as they are introduced or removed from the workplace without affecting the actual policies and responsibilities of the ECP contained in the Macro sections, as was the strategy used by B.C.I.T. in implementing its ECP (2011).

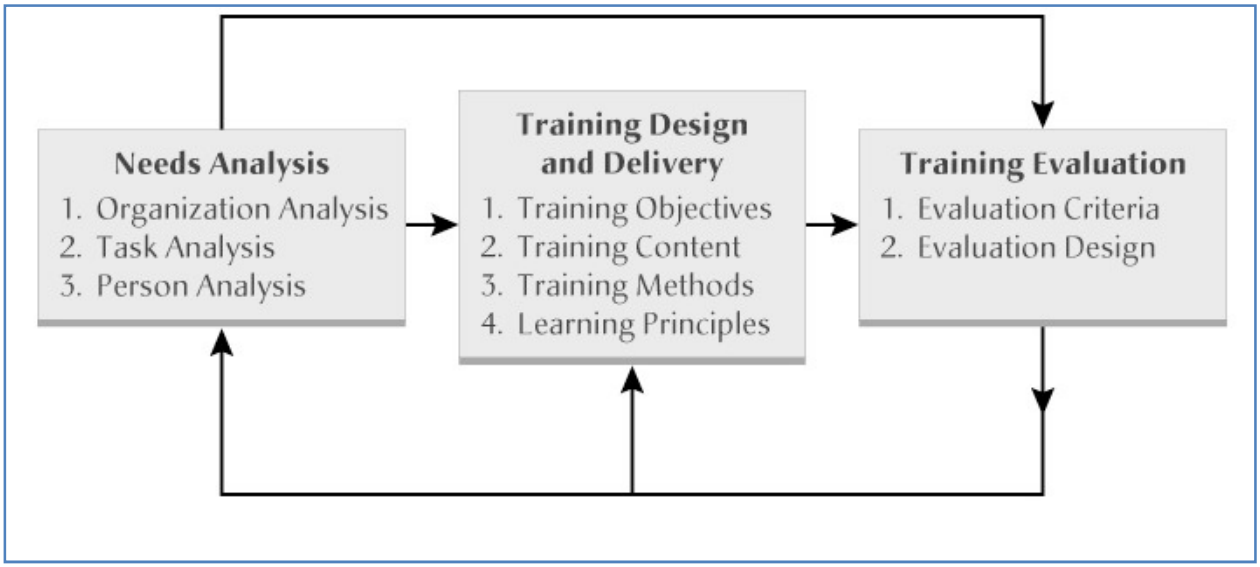
Additionally, appendix I of the ECP contains the Work Cell locations in which the Designated Substances were detected, the detection results as of the most recent assessment, the 8 hour TWA, and the work procedures and PPE required in each location. This macro approach was taken to provide clearer understanding of exposure controls for employees assigned to each Work Cell. In designing the exposure controls and PPE requirements for each Work Cell the substances in each Work Cell were identified using the Worker Exposure Assessment (2010), and MSDSs were analyzed to determine the required engineering controls and PPE for each substance. The Substances with the highest requirement for engineering or PPE were used as the requirements in that Work Cell. For example, if substance A required a respirator, but substance B does not the Work Cell PPE requires the use of a respirator.

The intent of Appendix I is employees will not have to identify the individual substances in each Work Cell and their individual exposure controls and required PPE, but can instead find their Work Cell in Appendix II, and see which substances are present, what the exposure risks are, and what PPE will provide protection from all substances in that Work Cell.

Exposure Control Plan Training Program

In order to develop the training program for the ECP the Instructional Systems Design (ISD) Model was utilized (Figure 1) (Saks & Haccoun, 2010).

Figure 1



(Saks & Haccoun, 2010, pg 22)

Needs Analysis

In developing an ECP training program for Teleflex Canada Inc. Supervisors, including the Joint Health and Safety Committee, the Production Workers and Engineers employee groups were identified as requiring training, as they are the employees who have the highest risk of exposure to the designated substances in the performance of their duties. These employees routinely work in the work cells in which the greatest risk of exposure to Designated Substances exists, or supervise employees who are at risk.

Organizational Analysis

Teleflex has been identified as predominantly using a Classical Managerial Strategy, which is in line with the determination of the Organizational Macro Analysis section of this report. Additionally, the ECP is a legislated requirement, and the focus of training is on ensuring compliance which is facilitated through a Classical Managerial Strategy.

Concern

Teleflex's current safety training does not cover the risk of exposure to Designated Substances in the work cells. The WorkSafeBC OHS Regulations section 5.54 paragraph (2) requires an education and training program for the ECP (OHS Guidlines Part 5, 2012).

Importance

The ECP is a legislated requirement under the WorkSafeBC Occupational Health and Safety Regulation, Part 5, sections 5.54 and 5.57 (2012). The implementation of an ECP requires a section on outlining Education and Training for employees (OHS Regulations & Related Material, 2012). Providing training on the ECP will provide Teleflex Employees with a better understanding of the hazardous substances in the Work Cells, and will provide them with information regarding work processes, exposure risk, the appropriate PPE and possible symptoms to be aware of which indicate possible exposure to Designated Substances.

Task Analysis

Production Workers

Production workers have the greatest risk of exposure to the Designated Substances, as they are required to:

- perform routine maintenance and inspections on production equipment
- Operate production Equipment;
- Inspect manufactured products for defects;
- Assemble product components;
- Follow safety regulations; and
- Work primarily on the production floor (Production Worker Job Description, 2003).

Due to the proximity of Production Works to the Work Cells, and frequency of time they spend performing their jobs on the production Floor they are at the greatest risk of exposure.

Supervisors

Supervisors do not Work in proximity to the Work Cells as frequently as the Production Workers as they split their time between an office environment, and the work cells on the production floor. They are required to:

- Supervise staff;
- Ensure safe working conditions for Production Workers;
- Provide discipline as required;
- Provide support and Leadership; and

- Provide training and development to staff (Manufacturing Supervisor Job Description, 2005).

For the purpose of the ECP Training Program the Joint Health and Safety Committee members have been included in the supervisor category, as they have similar task responsibilities in Training and Supervising the ECP.

Engineers

Design, Manufacturing and Quality Engineers at Teleflex work primarily in an office environment; however, they are required to perform some of their duties in the work cells on the production floor. Their Job Descriptions include:

- Research and develop new and existing products (Product Designer Job Description, 2005);
- Conduct validation tests on products (Product Designer Job Description, 2005);
- Design and build automated assembly equipment (Manufacturing Engineer Job Description, 2007);
- Improve existing production equipment (Manufacturing Engineer Job Description, 2007);
- Correct product manufacturing and warranty issues (Quality Engineer Job Description, 2007);
- Work in office and production environments (Product Designer Job Description, 2005) (Manufacturing Engineer Job Description, 2007) (Quality Engineer Job Description, 2007).

In addition to the tasks listed above engineers are responsible for identifying introducing potentially hazardous substances to the products and the manufacturing processes (Curley, 2012).

Training Design and Delivery

The ECP Training Program will be divided into 3 categories of Production Workers, Supervisors and Engineers in order to provide training to the specialized requirements of each group.

Manufacturing Supervisors and Joint Health and Safety Members Training

Training Objectives

1. Manufacturing Supervisors and Members of the Joint Health and Safety Committee will be able to understand the Exposure Control Plan and its purpose demonstrated by achieving 80% on an Exposure Control Plan Training Program Exam.

2. Manufacturing Supervisors and Members of the Joint Health and Safety Committee will be able to provide training and guidance for their subordinates regarding Teleflex's Exposure control Plan.

3. Manufacturing Supervisors and Members of the Joint Health and Safety Committee will be able to identify hazardous substances as they are introduced to Teleflex either through substances or materials used in a product or the manufacturing processes using the Table of Exposure Limits for Chemical and Biological Substances (2011) and MSDSs.

Training Content

Manufacturing Supervisors and Joint Health and Safety Committee Members will require training on:

- Their responsibilities as outlined by the ECP
- The ECP Document layout and Content
- Designated Substances present in the Work Cells
- How to limit exposure risk, as outlined in the ECP, through
    - Engineering Controls
    - Administrative Controls
    - PPE
- Health Monitoring
- Non-compliance Risks
- Where to access the ECP
- Introduction of Hazardous Substances to the workplace
    - Identifying what substances are required to be included in the ECP in compliance with OHS Regulations Part 5 section 5.54 paragraphs (a) and (b)
    - Identification of Designated Substances and their exposure limits using the Table of Exposure Limits for Chemical and Biological Substances (2011)
    - Identifying the exposure limits of other substances using the MSDSs
- Outline and explain the 8 hour Total Weighted Average (TWA) exposure limits
    - Calculate the 8 hour TWA for workers required to work over 8 hours in accordance with Table 3

Training Methods

Manufacturing Supervisors and Members of the Joint Health and Safety Committee training will be conducted off-the-job using a combination of Lecture and Discussion training methods (Saks & Haccoun, 2010). The Manufacturing Supervisors will be predominantly responsible for training the Production Workers for initial training, refresher training, as required, and upon new hires joining Teleflex, s this training session will have a focus on Train-the-Trainer (Saks &

Haccoun, 2010). The lecture portion will pass on the required information of the ECP, and the discussion position will then be utilized to generate discussion on the purpose of the ECP and how the Supervisors and Joint Health and Safety Committee can lead the training and implementation of the ECP at Teleflex.

Training will take place in Teleflex's Training classroom with the 4 Manufacturing Supervisors, the 3 worker and 3 managerial representatives of the Joint Health and Safety Committee, and a single trainer to teach the lecture and facilitate the discussion over a single 1 hour and 30 minute training session.

Production Worker ECP Training

Training Objectives

1. Direct and Indirect Production Workers will be able to understand the Exposure Control Plan and how it applies to them in the performance of their duties, which Production Workers will continuously be assessed by supervisors through regular supervision and workplace monitoring walkthroughs.

2. Direct and Indirect Production Workers will be able to identify the Designated Substances in their Work Cells, and select the appropriate PPE to protect them from exposure risk on a daily basis as assessed by their supervisors.

Training Content

Direct and Indirect Production Workers will require training on:

- Their responsibilities as outlined by the ECP
- The ECP Document layout and Content
- Designated Substances present in the Work Cells
- How to limit exposure risk, as outlined in the ECP, through
    - Engineering Controls
    - Administrative Controls
    - PPE
- Outline and explain the 8 hour Total Weighted Average (TWA) exposure limit
- Health Monitoring requirements
- Non-compliance Risks
- Where/how to access the ECP

Training Methods

The Direct and Indirect Production Workers at Teleflex will receive Off-the-Job training on the ECP through lectures only. The primary requirement of ECP training for the Production Workers is to inform them of the policy and the requirements for work procedures and the use of PPE. The lecture will pass on the required information of the ECP, and the Production Workers' responsibilities in complying with the policy.

Teleflex's Training room can only accommodate 50 people, so Training for the 195 Direct and 80 Indirect Production Workers will have to broken down into smaller groups. Dividing the groups by shift will also be required. The night and afternoon shifts are small and can be accommodated in a single 1 hour training session for each shift (Sunga, 2012). The day shift is comprised of the majority of the Production Workers and 3 1 hour training sessions would be required to accommodate all of them.

Engineer ECP Training

Training Objectives

1. Design, Manufacturing and Quality Engineers will be able to understand the Exposure Control Plan and how it applies to them in the performance of their duties by achieving 80% on an Exposure Control Plan Training Program Exam.

2. Design, Manufacturing and Quality Engineers will be able to identify the Designated Substances in their Work Cells, and select the appropriate PPE to protect them from exposure risk on a daily basis.

3. Design, Manufacturing and Quality Engineers will be able to identify hazardous substances as they are introduced to Teleflex either through substances or materials used in a product or the manufacturing processes using the Table of Exposure Limits for Chemical and Biological Substances (2011) and MSDSs.

Training Content

Design, Manufacturing and Production Engineers will require training on

- Their responsibilities as outlined by the ECP
- The ECP Document layout and Content
- Designated Substances present in the Work Cells
- How to limit exposure risk, as outlined in the ECP, through
    - Engineering Controls

    - Administrative Controls
    - PPE
- Health Monitoring
- Non-compliance Risks
- Where to access the ECP
- Introduction of Hazardous Substances to the workplace
    - Identifying what substances are required to be included in the ECP in compliance with OHS Regulations Part 5 section 5.54 paragraphs (a) and (b) (2012)
    - Identification of Designated Substances and their exposure limits using the Table of Exposure Limits for Chemical and Biological Substances (2011)
    - Identifying the exposure limits of other substances using the MSDSs
- Outline and explain the 8 hour Total Weighted Average (TWA) exposure limits
    - Calculate the 8 hour TWA for workers required to work over 8 hours in accordance with Table 3.

Training Methods

Design, Manufacturing and Quality Engineers training will be conducted off-the-job using a combination of Lecture and Discussion training methods (Saks & Haccoun, 2010). The Design, Manufacturing and Quality Engineers will be predominantly responsible for introducing new potentially hazardous substances into the workplace or identifying less hazardous substances to replace existing hazardous substances currently present at Teleflex. The lecture portion will pass on the required information of the ECP, and the discussion position will then be utilized to generate discussion on the purpose of the ECP and how engineers can contribute to the elimination of hazardous and designated substances as much as practicable at Teleflex.

Training will take place in Teleflex's Training classroom with all 43 Design, Manufacturing and Quality Engineers, and a single trainer to teach the lecture and facilitate the discussion over a single 1 hour and 30 minute training session.

Discussion

Training Evaluation

ECP Training Program Exam

A post lecture exam will be provided to the Manufacturing Supervisors, Joint Health and Safety Committee Members, and the Design, Manufacturing and Quality Engineers. The purpose of the exam is to confirm the ECP is fully understood as these groups have the highest level of

responsibility as direct supervisors of Production Workers and production processes, and will be expected to be the Subject Matter Experts (SME) of the ECP.

The ECP raining Program exam, contained in Appendix K, will consist of 10 questions and will have a required pass rate of 80% in order to confirm knowledge transfer, and training program effectiveness.

Product Impact and ROI

Associated Costs

The costs associated with the ECP program have been calculated below. The primary cost is ECP training costs as the ECP has already been developed.

Training Costs

Manufacturing Supervisor and Joint Health and Safety Committee Training Cost

Manufacturing Supervisor and Joint Health and Safety ECP Training Costs					
Expense	**Salary**	**Salary (/hr)**	**Time (hrs)**	**# of Employees**	**Total**
Manufacturing Supervisors	$ 72,700.00	$ 34.95	1.5	4	$ 209.71
Trainer	$ 72,700.00	$ 34.95	7.5	1	$ 262.14
JOHS Committee Management Members	$ 50,000.00	$ 24.04	1.5	3	$ 108.17
JOHS Committee Employee Member	N/A	$ 21.32	1.5	3	$ 95.94
		Total Supervisor Training Costs			$ 675.96

The training costs for this group include the cost of the trainer, whose salary has been assumed to be the same as the Manufacturing Engineers. The trainer's time has been entered as 7.5, which includes 6 hours of prep time and 1.5 to conduct the training.

The cost of training the Manufacturing Supervisors and Joint Health and Safety Committee also includes the salary average of the 4 Manufacturing Engineers identified in the analysis. The Joint Health and Safety Committee's Management Members were assumed to have an average salary of $50,000 (Sunga, 2012), and the Employee Members were assumed to be making the maximum hourly wage of $21.32.

Engineer Training

Engineer ECP Training Costs					
Expense	**Salary**	**Salary (/hr)**	**Time (hrs)**	**# of Employees**	**Total**
Engineers	$ 68,800.00	$ 33.08	1.5	43	$ 2,133.46
Trainer	$ 72,700.00	$ 34.95	4.5	1	$ 157.28
		Total Engineer Training Costs			$ 2,290.75

In order to calculate the cost of training for the engineers the hourly wage was calculated for engineers using the average salary of $68,800 and multiplied by the 1.5 hours of training. The trainers wage was calculated assuming the Manufacturing Supervisors average salary.

Production Worker Training

Production Worker ECP Training Costs					
Expense	**Salary**	**Salary (/hr)**	**Time (hrs)**	**# of Employees**	**Total**
Direct Production Workers	N/A	$ 21.32	1	195	$ 4,157.40
Indirect Production Workers	N/A	$ 21.32	1	80	$ 1,705.60
Trainer	$ 72,700.00	$ 34.95	5	1	$ 174.76
		Total Engineer Training Costs			$ 6,037.76

The Production Worker Training was calculated using the highest hourly wage rate of $21.32. The trainers for the Production Workers will be the Manufacturing Supervisors so their average salary was calculated to an hourly rate, multiplied by 5 hours for the 5 training sessions required to train all the Production Workers assuming 1 instructor per training session on various shifts.

New Hire Training

Annual New Hire ECP Training Costs					
Expense	**Salary**	**Salary (/hr)**	**Time (hrs)**	**# of Employees**	**Total**
Production Workers	N/A	$ 21.32	0.5	30	$ 319.80
Engineer	$ 68,800.00	$ 33.08	0.5	5	$ 82.69
Trainer	$ 72,700.00	$ 34.95	1	35	$ 1,223.32
		Total Annual New Hire Training Costs			$ 1,625.81

In calculating the training costs of newly hired Engineers and Production workers it was assumed that 30 Production Workers and 5 Engineers would be hired each year on average (Sunga, 2012). The trainers for new hires will be the Manufacturing Supervisors s their average salary was used, and multiplied by 35, as this is the total number of new hires expected each year. It is assumed that new employees will be trained as they are hired, and that they are all hired on different occasions, making joint training impossible.

Total Training Cost

Initial Training Program Cost

The initial ECP Training Program will cost $10,630 in the first year of implementation. This includes the costs of training all employees as outlined in the ECP Training Program in 2012.

Total Initial ECP Training Costs in 2012	
Total Supervisor Training Costs	$ 675.96
Total Engineer Training Costs	$ 2,290.75
Total Engineer Training Costs	$ 6,037.76
Total Initial Training Costs	$ 9,004.47

Annual New Hire Training

Forecasting the annual ECP Training for newly hired Engineers and Production Workers for the 5 years following a 2012 implementation results in a total new hire training cost of $8,129.05 starting in 2013.

Total New Hire Annual ECP Training Costs	
Total New Hire Training Costs 2013	$ 1,625.81
Total New Hire Training Costs 2014	$ 1,625.81
Total New Hire Training Costs 2015	$ 1,625.81
Total New Hire Training Costs 2016	$ 1,625.81
Total New Hire Training Costs 2017	$ 1,625.81
Total New Hire Training Costs	$ 8,129.05

Total 5 Year Training Cost of ECP

Over 5 years the ECP Training Program, including initial training for current Teleflex employees and predicted future employees, will cost Teleflex Canada Inc. $17,133.52.

Total ECP Training Program Costs	
Total Training Costs	$ 9,004.47
Total New Hire Training Costs	$ 8,129.05
Total ECP Training Program Costs	$ 17,133.52

Benefits

The benefits of implementing an ECP at Teleflex Canada Inc can be divided into tangible or intangible benefits.

Intangible Benefits

The ECP program has a number of intangible benefits that may occur as a result of its implementation at Teleflex Canada Inc.

Safety Culture Promotion

Implementing an ECP ties a number of existing Teleflex safety policies and programs together, which has the potential to reinforce the safety culture of the workplace if properly implemented and led by Teleflex Managers and Supervisors. The ECP provides a means for further protecting employees which may encourage employees to take a greater role in safety.

Replacement of Hazardous Substances

The ECP has clearly identified the Designated Substances in the workplace, and the potential exposure risks to employees. This may encourage Supervisors and Engineers to seek safer less hazardous alternatives to hazardous materials and substances currently present in the workplace, which will further reduce the exposure risks to employees.

WorkSafeBC Administrative Penalties or Levees

It is impossible to predict what the cost of a penalty imposed by WorkSafeBC may be due to the fluctuation of the penalties based on the safety and compliance history of the company and the severity of a possible incident, but by implementing the ECP Teleflex is displays its due diligence in protecting its employees from exposure to hazardous and Designated Substances. Due diligence through the ECP should ensure that Teleflex is protected against any WorkSafeBC penalties regarding exposure.

Tangible Benefits

Decrease in Exposure Related Accidents/Incidents

In implementing the ECP at Teleflex Canada Inc. it is predicted that there will be a measurable decrease in exposure related accidents and incidents among employees. This can easily be tracked in the future trough the number of Teleflex Accident/Incident Investigation Reports (2009) submitted relating to possible exposure accidents/incident, or the number of accidents/incident claims.

WorkSafeBC BC Experience Rating

In implementing the ECP at Teleflex Canada Inc. it is predicted that one of the primary benefits will be a gradual reduction in annual WorkSafeBC Premium Experience Rating Surcharges as the ECP reduces exposure related lost time injuries, and the ECP training refreshes and reinforces employee knowledge and compliance with existing safety policies and programs contained in the appendices of this report.

Predicted Experience Rating Adjustment

The change in Experience Rating Surcharge % for each year was assumed based on Teleflex's previous history (WorkSafeBC, 2011). The assumptions are conservative estimates based on Teleflex's Experience Rating adjustment history for the past 5 years (WorkSafeBC, 2011).

2012 – 2013

2012 is the current and base rate for calculating the benefit. The change from 2012-2013 is assumed to be from 14.40% to 13%. The change in 2013 reflects the current decreasing surcharge trend experienced by Teleflex, and does not account for the ECP as the Experience rating does not reflect the previous year (WorkSafeBC, 2011).

2013 – 2014

The predicted change from 2013-2014 is assumed to be a decrease from 13% to 8% as this is the first assessment that will reflect the ECP implementation and training, and will likely result in the greatest change as the ECP training will have had the greatest effect in its first year of implementation.

2014 – 2015

The predicted change from 2014-2015 is a further decrease of 2% as ECP training is still current.

2015 – 2016 and 2016- 2017

A decrease of 1% is assumed between 2015-2016 and 2016-2017, as the influence of the ECP training begins to level out resulting in a surcharge of 5% in 2016, and 4% in 2017.

Total WorkSafeBC Premium

The Annual Totals for the WorkSafeBC Premiums in Table 5 were calculated by dividing the assessable pay roll by $100 as WorkSafeBC Premium payments are calculated per $100 of assessable payroll (WorkSafeBC, 2011). The annual Net Rate is calculated by adding the

assumed 4 value of the experience rating to the base rate. The Net Rate is then multiplied by the assessable payroll per $100 which provides the Total WorkSafeBC Premium for each year.

Annual Benefit

The Annual Net Benefit of the ECP and training is calculated in Table 5 using 2012's Total WorkSafeBC Premium as the base level cost for comparison to predicted changes to the experience rating. Starting in 2013 the calculated annual Total WorkSafeBC Premium is subtracted from the 2012 base Total WorkSafeBC Premium resulting in an Annual Gross Benefit. The assumed cost of New Hire Training is subtracted from the Annual Gross Benefit which results in the Annual Net Benefit of the ECP and training. The predicted decrease in Teleflex's Experience Rating Surcharge results in a negative Net Benefit for 2013, but positive Net Benefits from 2014 to 2017.

Table 5

Annual Benefit and Net Present Value (NPV)						
	Current Year 2012	**2013**	**2014**	**2015**	**2016**	**2017**
Experience Rating Surcharge %	14.40%	13.0%	8%	6%	5%	4%
Experience Rating $	$ 0.17	$ 0.16	$ 0.10	$ 0.08	$ 0.06	$ 0.05
Base Rate	$ 1.21	$ 1.23	$ 1.25	$ 1.27	$ 1.29	$ 1.31
Net Rate	$ 1.38	$ 1.39	$ 1.35	$ 1.35	$ 1.35	$ 1.36
Assessable Payroll	$ 17,000,000	$ 17,000,000	$ 17,000,000	$ 17,000,000	$ 17,000,000	$ 17,000,000
Total WorkSafeBC Premium	$ 235,320.80	$ 236,283.00	$ 229,500.00	$ 228,854.00	$ 230,265.00	$ 231,608.00
Annual Gross Benefit		-$ 962.20	$ 5,820.80	$ 6,466.80	$ 5,055.80	$ 3,712.80
New Hire Training Cost		$ 1,625.81	$ 1,625.81	$ 1,625.81	$ 1,625.81	$ 1,625.81
Annual Net Benefit		-$ 2,588.01	$ 4,194.99	$ 4,840.99	$ 3,429.99	$ 2,086.99
Initial Training Program Cost	$ 9,004.47					
Net Present Value (NPV) Interest Rate	5.0%					
Net Present Value of ECP Program	$ 974.64					

Note: For the purpose of calculating the annual benefit of the ECP the annual base rate has been assumed to increase, as this has been the trend for Teleflex (WorkSafeBC, 2011), by $0.02 annually. The Assessable payroll of $17 Million is based on the historic average of Teleflex Canada Inc. (WorkSafeBC, 2011).

Net Present Value

The predicted Net Present Value (NPV) of the ECP and the ECP Training Program is $974.64.

The Net Present Value (NPV) of the ECP and training is calculated by determining the present value of the predicted Annual Net Benefits from Table 5, which have accounted for the cost of new Hire Training, and assuming a 5% interest rate, then subtracting the initial cost of the ECP

Training Program. The NPV for the ECP and Training is calculated in Table 5 is $974.64, which though it is not high it is positive, and the ECP and Training Program should be implemented

Return on Investment (ROI)

The ROI of the ECP and Training is calculated at 33% or a return of $0.33per dollar invested.

The ROI was calculated by adding up the Annual Net Benefits of training from 2013-2017 and subtracting the initial cost of the ECP Training Program incurred in 2012, and dividing that by the initial of the ECP Training Program (Saks & Haccoun, 2010).

$$\frac{\$11{,}964.95 - \$9004.47}{\$9004.47} = 0.33\ or 33\%$$

Product Assessment

In order to assess the effectiveness of the ECP the following assessment metrics will be utilized.

Exposure Accident/Incident Rate

The rate of exposure related accidents of incidents can be recorded and tracked monthly and annually, and compared to years previous to the implementation of the ECP. The Accident/Incident Investigation Report (2009) provides the record to track exposure related accidents or incidents, and previous records can be easily retrieved from archives to determine previous exposure accident/incident trends.

The change in exposure accident/incident rates can be calculated and expressed as a percentage increase or decrease on a month to month or year to year basis.

This change percentage can be calculated by subtracting the base month or year for comparison (Period A) from the recent month or year (Period B), and dividing the sum by the base month or year (period A).

$\frac{Period\ B - Period\ A}{Period\ A}$ = % increase or decrease between periods

This metric will allow Teleflex Canada Inc. to track increases and decreases in exposure related accidents or incidents which will identify the effectiveness of the ECP by indicating a decrease

and a deficiency by indicating an increase in exposure related accidents/incidents. This assessment metric can also be tracked by building or Work Cell to identify potential gaps in training or ECP compliance.

Overall Accident/Incident Rate

The overall accident/incident rate can be tracked as per the exposure accident/incident rate above. The ECP ties all a number of safety policies together. After initiating the ECP the overall accident Incident percentage change can be compared to previous years and can indicate the ECP's effectiveness in linking and raising awareness of overall safety.

WorkSafeBC Experience Rating Premium or Surcharge

The annual WorkSafeBC Experience Rating premiums or Surcharges can be recorded and tracked by Teleflex. The experience Rating is a valuable metric in comparing Teleflex's safety record to other organizations in classification group. Though the Experience rating is based on all workplace injuries extreme changes may be linked to ECP training as it provides training on exposure related material, and a refresher of existing policies, and ties them all together by identifying the risks and the PPE and policies designed to reduce the risk of exposure, which may motivate employees to ensure they comply with the requirements of the ECP.

Implementation Plan

Implementation Stages

The implementation plan will be implemented in the following primary stages.

ECP Submission

The ECP, Analysis Report, Training Program and Implementation Plan shall be submitted to Thomas Curley, Director Human Resources on 23 March 2012. This is the effective start date of the ECP implementation plan.

ECP Review and Approval

Prior to implementing the ECP as a Teleflex Canada Controlled Document the ECP will be reviewed by the

- Director Human Resources;
- Director of Operations;
- Director of Engineering and Program Management; and
- The Joint Health and Safety Committee Members.

This review will ensure that all parties are familiar with the ECP and their roles and responsibilities as well as to add or edit the ECP.

Once all parties have had an opportunity to review the ECP it will be implemented as a Controlled Document at Teleflex Canada, and the subsequent implementation steps can commence. It is assumed that the ECP review and approval could be completed in 2 weeks from the submission of the ECP to the Director Human Resources.

ECP Communication

ECP Communication will provide all Teleflex Canada employees with an opportunity to familiarize them with the ECP document. Communication of the ECP cannot occur prior to the ECP Review and Approval implementation stage; however, it can occur simultaneously with the implementation of ECP Training. Communication is recommended utilizing the following tools.

Email

On completion of the ECP Review and Approval the Employee Services department can send a mass e-mail to all Teleflex Canada employee e-mail accounts. The email would include a notice

to employees regarding the ECP contents and the training implementation plan as well as a copy of the ECP.

Flex Times

Flex Times is Teleflex Canada's employee news letter which is attached to, and distributed with employee payrolls. An article should be written and published in the April 20th edition of Flex Times regarding the implementation of the ECP for the information of employees. The article should include where employees can access a copy of the ECP on the Teleflex Intranet or who to request a copy from.

Employee Talks

Employee talks are 1 hour sessions held for employee on the last Friday of each month (Sunga, 2012). Te employee talks are in place to keep employees informed, and present an excellent opportunity to inform employees of the ECP. The employee talk should mention where employees can access a copy of the ECP on the Teleflex Intranet or who to request a copy from. The most appropriate date to mention the ECP in an employee talk is scheduled for April 20th 2012, as this is after the ECP Review and Approval stage should be completed.

Notice Boards

Teleflex Canada has Notice Boards posted in lunch rooms, and throughout the facilities. A notice regarding the implementation of the ECP can be posted on the notice boards with information on where to get a copy of the ECP. A copy of the ECP can be placed on the notice board or in a lunch room for employees.

ECP Training

Once the ECP has been reviewed and approved ECP Training can begin, and the ECP Training can occur simultaneously with the ECP communication phase of the implementation plan. Once the EP has been approved the designated Trainer can begin preparing the training program and materials.

Manufacturing Supervisors and Joint Health and Safety Committee

The manufacturing Supervisors and Joint Health and Safety Committee members will be the first employees to undergo ECP training as are expected to be the Trainers and Subject Matter Experts (SME); therefore their training must be complete prior to moving on to the Production

Workers or Engineers. This training will be require 1 training session of 1 and a half hours, and will end with the ECP Training Program Exam. The implementation time line provides a week for this as once they complete the training the Manufacturing Supervisors will have time to prepare to teach the Production Workers and Engineers.

Production Workers

Once the manufacturing Supervisors and Joint Health and Safety Committee members have complete their training and prepared to teach, production Worker Training can commence. The Production Workers training will be conducted prior to the Engineers as the Production Workers are at the greatest risk of exposure as they work in the locations with where the Hazardous or Designated Substances are present with the greatest frequency.

The Training for Production Workers will be held over 5 hour long sessions. This will allow all Production Workers from The Day, Afternoon and Night shifts to receive training during their respective shifts while also accommodating the 195 Direct and 80 Indirect Production Workers in a classroom with a 50 person capacity. This training will take place over a week, and will be instructed by the shift's Manufacturing Supervisor.

Engineers

The Engineers will be the final group to receive the ECP Training, which can commence in the week following the Production Worker training. The training for Engineers can be scheduled at any time over the week follow the Production Worker's training. The training will require 1 and a half hours to complete including the ECP Training Program Exam.

ECP Annual Review

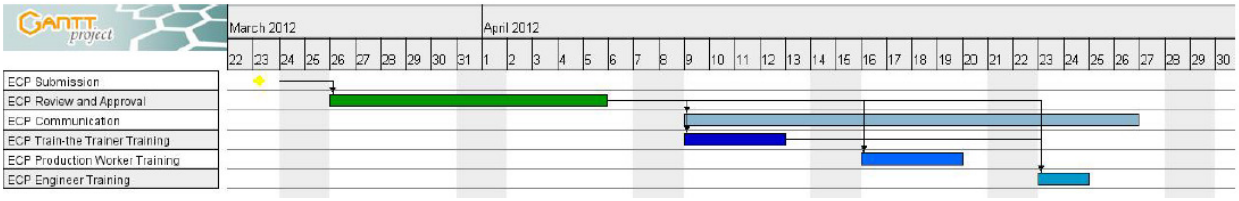
In accordance with OHS regulation 5.54 paragraphs (3) the ECP must be reviewed at least annually to ensure that it is up to date and covers all Hazardous or Designated substances that may have been introduced over the past year. The ECP is due for a review no later than April 2013.

ECP Implementation Timeline

The ECP Implementation plan time line is depicted below, including a Task and resource schedule chart.

Exposure Control Plan Implementation Plan
3/23/12-4/27/12

Gantt Chart



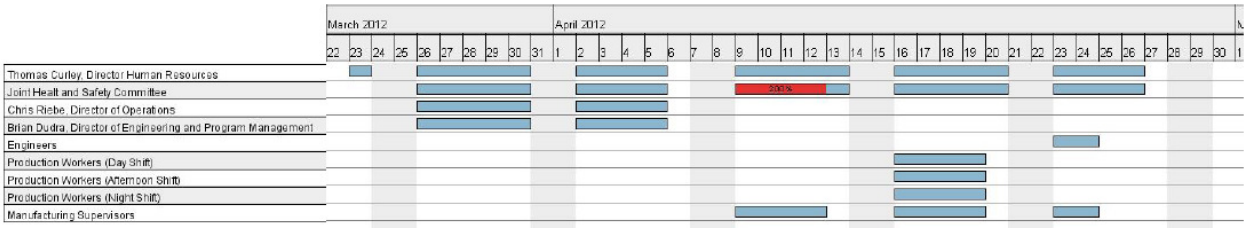
Exposure Control Plan Implementation Plan
3/23/12-4/27/12

Tasks List

Name	Start	End	Milesto	%	Resources	Notes
ECP Submission	3/23/12	3/24/12	true	0		
ECP Review and Approval	3/26/12	4/6/12	false	0		
ECP Communication	4/9/12	4/27/12	false	0		
ECP Train-the Trainer Training	4/6/12	4/12/12	false	0		
ECP Production Worker Training	4/16/12	4/20/12	false	0		
ECP Engineer Training	4/23/12	4/25/12	false	0		

Exposure Control Plan Implementation Plan
3/23/12-4/27/12

Resources Chart



Conclusion

The ECP and ECP raining Program not only protects employees from injury or illness due resulting from exposure to Hazardous or Designated Substances, but it also protects Teleflex and its Managers and Supervisors from potential financial or criminal penalties. An ECP is required by OHS Regulation legislation if it is proven that Hazardous substances are present in the work environment in sufficient quantities, or if any quantity of a WorkSafeBC Designated Substance is identified in the workplace. As a Worker Exposure Assessment, commissioned by Teleflex Canada, reported traces of substances determined to be Designated Substances, it does not matter that the recorded levels of these Designated Substances are well below the 50% mark of the 8 hour TWA Teleflex must comply with the OHS Regulations by implementing an ECP and training its employees on safe work procedures and PPE requirements.

Though, implementing an ECP and Training Program for trace amounts of Designated Substances may seem like another expense, but the benefit of implementing the ECP developed for Teleflex Canada is that it will connect the various existing Teleflex Canada safety policies, and result in safety refresher training as well as connecting safety requirements to the potential risks employees are exposing themselves to through non-compliance of with the ECP. Implementing the ECP and Training employees will likely result in a decrease of the WorkSafeBC Premium Surcharge percentage that Teleflex is currently paying, which will save Teleflex money while complying with OHS Regulations.

Annotated Bibliography

Accident/Incident Investigation Report. (2009, March 4). Retrieved March 2, 2012, from Teleflex Canada Inc.

The Accident/Incident Investigation Report is Teleflex Controlled Form CF151, and was not used in developing this report: however, it is referenced in the report and the ECP, as it is linked to the ECP in the documentation and Review sections.

Arsenic MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Arsenic was one of the Designated Substances identified at TeleFlex. The Arsenic MSDS sheets were used to identify the risks and symptoms of exposure associated with Arsenic, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Benzene MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Benzene was one of the Designated Substances identified at TeleFlex. The Benzene MSDS sheets were used to identify the risks and symptoms of exposure associated with Benzene, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Beryllium MSDS. (1992, November). Retrieved February 24, 2012, from www.first.ethz.ch: http://www.first.ethz.ch/infrastructure/Chemicals/Salts_solids/MSDS_Be.pdf

Beryllium was one of the Designated Substances identified at TeleFlex. The Beryllium MSDS sheets were used to identify the risks and symptoms of exposure associated with Beryllium, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Cadmium MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Cadmium was one of the Designated Substances identified at TeleFlex. The Cadmium MSDS sheets were used to identify the risks and symptoms of exposure associated with Cadmium,

and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Carbon Monoxide MSDS. (2009). Retrieved February 24, 2012, from www.mathesongas.com: http://www.mathesongas.com/pdfs/msds/MAT04290.pdf
Carbon Monoxide was one of the Designated Substances identified at TeleFlex. The Carbon Monoxide MSDS sheets were used to identify the risks and symptoms of exposure associated with Carbon Monoxide, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Cobalt MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/
Cobalt was one of the Designated Substances identified at TeleFlex. The Cobalt MSDS sheets were used to identify the risks and symptoms of exposure associated with Cobalt, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Collective Agreement. (2009, September 1). Retrieved March 9, 2012, from Teleflex.
The Collective Agreement between Teleflex and the Christian Labour Association of Canada (CLAC) was a valuable tool which was used to identify rate of pay for union members as well as work shifts four hourly and salary unionized employees.

CTPV . (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/
Coal Tar Pitch Volitile (CTPV) was one of the Designated Substances identified at TeleFlex. The CTPV MSDS sheets were used to identify the risks and symptoms of exposure associated with CTPV, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Curley, T. (2012, February 24). Director, Human Resources, Teleflex Canada Inc. (M. Williams, Interviewer)
As part of my analysis I interviewed Tom Curley extensively in order to get background on Teleflex as well as an idea of the strategy employed. He also provided significant knowledge on

Lean production techniques, business processes and other information vital to the report and development of the ECP.

Dress Code. (2009, June 11). Retrieved March 2, 2012, from TeleFlex Canada Inc.

The Teleflex dress code provided information on the dress requirements for Teleflex employees. The primary use of this document was to determine the dress requirements for production workers in the Work Cells such as lab oats or coveralls, as these can reduce the risk of exposure.

Dudra, B. (2012, March 9). Director of Engineering and Program Management. (M. Williams, Interviewer)

The interview with Brian Dudra was conducted in order to identify how Teleflex attempts to eliminate hazardous substances from its processes and products. The information from this interview was used to determine the Role and Responsibilities of the Director of Engineering and Program Management pertaining to the ECP.

Eating or Open Food within the Manufacturing Facility and Laboratories. (2009, July 21). Retrieved March 2, 2012, from TeleFlex Canada Inc.

The Teleflex Eating or Open Food Controlled Document CD 135 was included in the micro assessment of Teleflex as it is a pre-existing safety policy, and it was used in developing the Hygiene and Decontamination section of the ECP.

Ethyl Benzene MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Ethyl Benzene was one of the Designated Substances identified at TeleFlex. The Ethyl Benzene MSDS sheets were used to identify the risks and symptoms of exposure associated with Ethyl Benzene, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Exposure Control Plan For Designated Substances. (2011, April). Retrieved March 5, 2012, from www.bcit.ca: http://www.bcit.ca/files/safetyandsecurity/pdf/appendix_a_welding.pdf

BCIT's Exposure Control Plan was used to help design the layout, content and occasional wording of the ECP developed for Teleflex. BCIT's ECP provided the idea to develop Teleflex's EP with a Macro and Micro section as this is how BCIT approached the ECP.

Formaldehyde MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Formaldehyde was one of the Designated Substances identified at TeleFlex. The Formaldehyde MSDS sheets were used to identify the risks and symptoms of exposure associated with Formaldehyde, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Hazardous Materail Introduction. (2011, August 11). Retrieved March 2, 2012, from TeleFlex Canada Inc.

The Hazardous Material Introduction form that is being drafted by Teleflex was used in conducting the micro organizational analysis, and was linked to the ECP as the Hazardous Materials Introduction form will be used to identify whether or not a newly introduced substance would need to be included in the ECP.

Irving, D. (2012, March 19). WorkSafeBC Hygiene Officer. (M. Williams, Interviewer)

An interview was conducted with Mr. Irving to discuss the presence of Oil Mist in the Worker Exposure Assessment (2010), as a further investigation into this substance lead to ambiguity of what the substance was, and a no similar substances could be identified Mr. Irving was consulted on how to handle the substance in the ECP. He mentioned to follow up with the company that completed the assessment, but this was not possible as the assessment was conducted in 2010 and the substance was likely no longer in the workplace.

Job Training Progress Form. (2010, November 12). Retrieved March 9, 2012, from TeleFlex Canada Inc.

The job training progress was used to identify a method of tracking employee ECP training completion. The training completion form does include a section regarding safety, but a section for the ECP would need to be added.

Kelloway, E. K., & Francis, L. (2011). *Management of Occupational Health and Safety* (Fifth ed.). Toronto, Ontario: Nelson Education Ltd.

This source was used in conducting the hazard and risk assessments in the organization microanalysis. It also aided in the identification of administrative, engineering and PPE controls in the ECP in conjunction with the MSDS for each Designated Substance.

Lead MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Lead was one of the Designated Substances identified at TeleFlex. The Lead MSDS sheets were used to identify the risks and symptoms of exposure associated with Lead, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Long, R. J. (2010). *Strategic Compensation in Canada* (Fourth ed.). Toronto, Ontario, Canada: Nelson Education.

This source was used in conducting the organizational macro analysis. The source was very useful in providing direction on the managerial strategy and the contextual variables as well as information on the Classical and Human Relations Managerial strategies.

Manganese MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Manganese was one of the Designated Substances identified at TeleFlex. The Manganese MSDS sheets were used to identify the risks and symptoms of exposure associated with Manganese, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Manufacturing Engineer Job Description. (2007, June 22). Retrieved March 16, 2012, from Teleflex Canada Inc.

This job description was obtained from Teleflex in order to complete the organizational micro analysis for Engineers and to complete the task analysis component of the needs analysis for the ECP training program development.

Manufacturing Supervisor Job Description. (2005, October 27). Retrieved March 16, 2012, from Teleflex Canada Inc.

This job description was obtained from Teleflex in order to complete the organizational micro analysis for Manufacturing Supervisors and to complete the task analysis component of the needs analysis for the ECP training program development.

Material Safety Data Sheet Listing. (2012). Retrieved February 2012, 2012, from www.sciencelab.com: http://www.sciencelab.com/

This source was a great resource for finding the MSDSs for the Designated Substances I identified at Teleflex Canada Inc. At the time of this report they had the MSD Sheets for 4,652 substances available on their website. This is a great source for MSDSs for pure substances ie not compounds or specific trade or branded chemicals.

McMaster University. (2003, July). Retrieved from Designated Substances Control Program.

This program was used as a guide to developing the ECP. It was used as a best practice as it is similar to an ECP and was used to develop the layout and language of the ECP in conjunction with other examples from other organizations such as BCIT.

Nickel MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/

Nickel was one of the Designated Substances identified at TeleFlex. The Nickel MSDS sheets were used to identify the risks and symptoms of exposure associated with Nickel, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

OHS Guidlines Part 5. (2012). Retrieved March 5, 2012, from www.worksafebc.com: http://www2.worksafebc.com/Publications/OHSRegulation/GuidelinePart5.asp#SectionNumber:G5.57

The OHS guidelines page expands upon the legislation sections by providing guidelines for organizations in order to help them understand and implement OHS policies or procedures required by the legislation. This site was used to ensure the ECP met the requirements of the OS Regulations legislation.

OHS Regulations & Related Material. (2012). Retrieved February 15, 2012, from www.worksafebc.com: http://www2.worksafebc.com/publications/OHSRegulation/Home.asp

The OHS Regulations & Related Material web page at www.worksafebc.com provided information on the legislative requirements for an ECP in regards to sections 5.58 and 5.57. It also provided the framework for the development of the ECP including the minimum requirements for the ECP documents that I have created.

Pehl, R. (2012, March 2). Manufacturing Engineer Manager. (M. Williams, Interviewer)

Rob Pehl conducted an interview and facility walkthrough and identified the engineering controls and ventilation in each of the identified Work Cells at Teleflex. This information he provided was used in the analysis and the development of work procedures for each Work Cell in Appendix I of the ECP.

Product Designer Job Description. (2005, October 27). Retrieved March 16, 2012, from Teleflex Canada Inc.

This job description was obtained from Teleflex in order to complete the organizational micro analysis for Engineers and to complete the task analysis component of the needs analysis for the ECP training program development.

Production Worker Job Description. (2003, April 7). Retrieved March 16, 2012, from Teleflex Canada Inc.

This job description was obtained from Teleflex in order to complete the organizational micro analysis for Production Workers and to complete the task analysis component of the needs analysis for the ECP training program development.

Quality Engineer Job Description. (2007, June 22). Retrieved March 16, 2012, from (Product Designer Job Description, 2005).

This job description was obtained from Teleflex in order to complete the organizational micro analysis for Engineers and to complete the task analysis component of the needs analysis for the ECP training program development.

Respirator Protection Program. (2009). Retrieved February 24, 2012, from TeleFlex Canada Inc.

This program was used to conduct the micro analysis of existing Teleflex safety policies and programs. It was used to determine the respirators that Teleflex provides employees and in what situations a respirator is or may be provided to an employee. The Respirator Protection Program was incorporated into the PPE sections of the ECP.

Retention and Destructive Policy Draft (2012). Retrieved March 2, 2012, from TeleFlex Canada Inc.

The Retention and Destructive Policy is being drafted by Teleflex to cover the requirement to maintain, archive and destroy records, including those of employees. It was used in the Documentation section of the ECP pertaining to the need to maintain accident/Incident Investigation Reports.

Saks, A. M., & Haccoun, R. R. (2010). *Managing Performance through Training and Development* (Fifth ed.). Toronto: Nelson Education Ltd.

The Saks (2010) textbook was used to outline the Instructional Systems Design (ISD) Model of training program development, which was used in developing the ECP Training Program outlined in this document. Additionally, it was used to develop the ROI portion of the benefits section of this report.

SeaStar Steering Fluid MSDS. (2012, March 5). Retrieved March 9, 2012, from Teleflex Intranet.

SeaStar Steering Fluid is used in the SeaStar assembly Work Cell which has been identified as containing Oil Mist, Severely Refined. As Oil Mist is an ambiguous substance name the SeaStar Steering Fluid MSDS was analysed to ensure that it was not what was detected as an oil Mist in the assessment or that it was not a Designated Substance

Sunga, A. (2012, March 2). Human Resources Generalist, Teleflex Canada Inc. (M. Williams, Interviewer)

Angela was a valuable resource as she is Teleflex`s OHS coordinator and arranged a number of interviews with Teleflex employees. She also discussed a number of processes for hiring and safety policies and processes with me which have been included in this report.

Table of exposure limits for chemical and biological substances. (2011, September 15). Retrieved February 24, 2012, from www.worksafebc.com: http://www2.worksafebc.com/Publications/OHSRegulation/GuidelinePart5.asp?ReportID=32895

This Source was used to identify the carcinogen, sensitizer and reproductive toxin ratings in accordance with ACGIH and IARC of substances detected at Teleflex Canada's Richmond facility. I was able to cross reference the substances identified on this list with the substances present at Teleflex and determine which are considered designated Substances under WorkSafeBC Occupational Health and Safety Regulations Section 5.57.

Teleflex Canada. (2012). Retrieved February 10, 2012, from www.teleflexcanada.com: http://www.teleflexcanada.com/about_us.html

The Teleflex Canada website was used primarily to gather information regarding Teleflex's history and products for use in the organizational macro analysis.

Teleflex Hand Protection Policy. (2007, October 10). Retrieved February 24, 2012, from TeleFlex Canada Inc.

The Hand Protection Policy is Teleflex Controlled Document CD113, and it outline the various gloves available to employees and the situations each should be used, and what each protects against. The Hand Protection Policy was used to develop the ECP and was linked to the ECP in the PPE section of controlling exposure in Appendix I of the ECP.

Teleflex Marine. (2012). Retrieved February 14, 2012, from http://www.teleflexmarine.com: http://www.teleflexmarine.com/support/about-us/#divisions

The Teleflex Marine website provided important information on the products manufactured by Teleflex including the SeaStar Optimus 360. The website also provided information on the location of Teleflex Marine divisions around the world.

Therrien, M. (2012, March 2). Quality Systems Leader. (M. Williams, Interviewer)
Maurice Therrien allowed me to interview him regarding the ISO 9001:2008 certification. He is an expert on the ISO certification process and informed of how ISO 9001:2008 pertains to quality and safety, and that ISO 9001:2008 is concerned with safety in so far as any safety infraction could damage the product or the equipment rather than a concern for the person. He also discussed the ISO 14000 certification which is focused on environmental impact, but is not used by Teleflex.

Titanium Dioxide MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/
Titanium Dioxide was one of the Designated Substances identified at TeleFlex. The Titanium Dioxide MSDS sheets were used to identify the risks and symptoms of exposure associated with Titanium Dioxide, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Toluene MSDS. (2010, January 11). Retrieved February 24, 2012, from www.sciencelab.com: http://www.sciencelab.com/
Toluene was one of the Designated Substances identified at TeleFlex. The Toluene MSDS sheets were used to identify the risks and symptoms of exposure associated with Toluene, and to identify the Engineering and PPE required to reduce the risk of exposure. This information was used to develop appendix I and II of the ECP.

Vibra-TITE MSDS. (2010, March 30). Retrieved March 9, 2012, from Teleflex Intranet.
Vibra-TITE is used in the SeaStar assembly Work Cell which has been identified as containing Oil Mist, Severely Refined. As Oil Mist is an ambiguous substance name the Vibra-TITE MSDS was analysed to ensure that it was not what was detected as an oil Mist in the assessment or that it was not a Designated Substance.

Wearing Safety Glasses Policy. (2011, March 4). Retrieved March 2, 2012, from TeleFlex Canada Inc.

The Safety Glasses Policy is Teleflex Controlled Document CD148 and it outline the requirement for all employees to wear Safety Glasses at all times on the production floor. The Hand Protection Policy was used to develop the ECP and was linked to the ECP in the PPE section of controlling exposure in Appendix I of the ECP.

Wong, L. (2012, March 2). Compensation & Benefits Coordinator, Teleflex Canada Inc. (M. Williams, Interviewer)

Lisa provided me with Teleflex's WorkSafeBC's Annual Rate notification Letters as well as information on previous exposure related incidents for the gap analysis and risk assessment. As the compensation specialist Lisa also provided me with information on the salaries and wages of employees in order to conduct the ROI calculation for time spent training employees on the ECP.

(2010). *Worker Exposure Assessment Report.* PHH ARC Environmental Ltd.

The Worker Exposure Assessment Report was used to identify the substances detected at Teleflex Canada that may be considered hazardous as well as the detected levels of each substance, and the specific locations each substance was detected in. This information was used to develop, and included in the ECP.

Workers Compensation Act . (2012, March 1). Retrieved March 11, 2012, from http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96492_03#section196

The Workers Compensation Act was used in developing the risk of non-compliance with the Safety Regulations and ECP in the micro analysis as well as the ECP in order to point out the risks to the organization and individuals in not complying with OHS Regulations.

Workplace Monitoring Policy. (2009, October). Retrieved February 24, 2012, from Teleflec Canada Inc.

The Workplace Monitoring Policy implemented by Teleflex outlines the requirement for monitoring exposure to hazardous substances, and has been used in developing the duties and responsibilities, and monitoring sections of the ECP.

WorkSafe BC Penalties. (2012). Retrieved March 10, 2012, from www.worksafe.com: http://www2.worksafebc.com/Topics/AccidentInvestigations/Penalties-Manufacturing.asp

The WorkSafeBC penalties webpage posts the WorkSafeBC imposed Administrative Penalties for companies who have failed to comply with the OHS Regulations or WCA. This was used to provide details on possible penalties that Teleflex could incur by not implementing an ECP in the risk analysis section of the report.

WorkSafeBC. (2011, October 15). Retrieved from Annual rate notification letter.

The Annual rate notification letter for 2011, 2010, 2009, 2008 and 2007 provided me with historic and present information on Teleflex`s base rate and surcharge percentages. This information was used in the organizational micro analysis to identify Teleflex's historical WorkSafeBC trends, and in developing assumptions for the benefits of implementing the ECP and Training Program.

Appendix A Worker Exposure Assessment Report

Worker Exposure Assessment Report

Select Chemicals

Teleflex Canada Inc., Richmond, BC

Prepared For:

Teleflex Canada Inc.
3831 No. 6 Road
Richmond, BC V6V 1P6

Prepared By:

PHH ARC ENVIRONMENTAL
Suite 406 – 13251 Delf Place
Richmond, BC V6V 2A2

November 9, 2010

PHH ARC Project #: 1669L

File: 1669LR01

EXECUTIVE SUMMARY

PHH ARC Environmental Ltd. (PHH ARC) was retained by Teleflex Canada Inc. (Teleflex) to conduct a assessment of worker exposures to various chemicals during routine work activities in select areas of the Teleflex Facility, located at 3831 No. 6 Road in Richmond, BC. The assessment was performed between September 27 and 28, 2010 by Mr. Aaron Wildgrove, Dipl. T. (OHS), *Project Coordinator*, and the project was managed by Mr. Hussein Jaffer, B.A.Sc.. (OHS), CRSP®, *Project Manager*, of PHH ARC.

Based on this assessment, PHH ARC concludes and recommends:

1. Workers were not at risk of overexposure to the select chemicals sampled at the time of the assessment. Note, however, that several identified chemicals are designated substances under the WorkSafe BC (WSBC) Occupational Health and Safety Regulations (OHSR); these substances are present in materials utilized within the facility (based on a comprehensive review of the respective Material Safety Data Sheets). These chemicals include, but are not limited to:

   - Benzene
   - Formaldehyde
   - Select metal constituents

   Therefore, as per Sections 5.57 and 5.54 of the WSBC OHSR, Thompson is required to develop and implement an Exposure Control Plan for each respective contaminant. This document must include the following sections, at the minimum:

   (a) Statement of purpose and responsibilities;
   (b) Risk identification, assessment and control;
   (c) Education and training;
   (d) Written work procedures;
   (e) Hygiene facilities and decontamination procedures;
   (f) Health monitoring, when required; and
   (g) Documentation.

2. Area levels of carbon monoxide, carbon dioxide, sulphur dioxide, nitrogen dioxide, total particulate and select volatile organic compounds do not indicate a potential for elevated worker exposure.

3. The collected sample of supplied breathing air from the Paint Booth's compressed breathing air apparatus met and conformed to the maximum allowable requirements of the *CSA Z180.1-00-Compressed Breathing Air*.

TABLE OF CONTENTS

APPENDIX

1.0 INTRODUCTION

PHH ARC Environmental Ltd. (PHH ARC) was retained by Teleflex Canada Inc. (Teleflex) to conduct a assessment of worker exposures to various chemicals during routine work activities in select areas of the Teleflex Facility, located at 3831 No. 6 Road in Richmond, BC. The assessment was performed between September 27 and 28, 2010 by Mr. Aaron Wildgrove, Dipl. T. (OHS), *Project Coordinator*, and the project was managed by Mr. Hussein Jaffer, B.A.Sc.. (OHS), *CRSP®, Project Manager*, of PHH ARC.

1.1 Purpose & Background Information

The purpose of this assessment is to replicate a previous worker exposure assessment completed by PHH ARC between April 10 to 12, 2007 (PHH ARC Project no. 10822N). Additional locations and workers were included in this sampling session, as requested by Teleflex.

1.2 Legislative Standards

The results of this assessment were compared to the applicable WorkSafe BC (WSBC) Occupational Health and Safety Regulations (OHSR). Refer to ***Appendix I*** for the relevant legislative excerpts that apply to this assessment.

1.3 Scope of Work

The scope of work for this study included the following:

- Assessment of the work environment and worker activities;
- Measurement of potential worker exposures – over the full duration of their work shift (8 hours) – to select chemicals, using established, validated sampling methodologies, as per the following:

Table 1-1: Building One Sampling Strategy

LOCATION	CHEMICAL	
Paint Room	• Benzene; • Toluene; • Ethyl benzene; and • Xylene.	• Methyl isobutyl ketone; • Methyl ethyl ketone; • n-butyl acetate; and • Compressed breathing air.
Sea Star Helm Assembly	• Oil mist/total particulate.	

Table 1-2: Building Two Sampling Strategy

LOCATION	CHEMICAL	
Trim Sender Assembly Area	• Metal particulate/total particulate.	
Proheat Electronics	• Metal particulate/total particulate.	
Welding Burlytic Area	• Metal particulate/total particulate.	
Proheat and Test Bench	• Coal tar pitch volatile/total particulate; and • Oil mist/total particulate.	• Carbon dioxide; • Carbon monoxide; • Sulphur dioxide; and • Nitrogen dioxide.
MBU Test Station	• Coal tar pitch volatile/total particulate.	• Carbon dioxide; • Carbon monoxide; • Sulphur dioxide; and • Nitrogen dioxide.
Bay Star Injection Molder	• Formaldehyde.	

Table 1-3: Building Three Sampling Strategy

LOCATION	CHEMICAL	
General Ventilation	• Total particulate.	• Carbon dioxide; • Carbon monoxide; • Sulphur dioxide; and • Nitrogen dioxide.

- Interpretation, analysis of the data-logged information, and evaluation of the sample results in relation to the applicable WSBC OHSR;
- Photography of the current site conditions and worker activities; and
- Preparation of this comprehensive report which includes methodologies, results, observations, conclusions and recommendations.

2.0 METHODOLOGY

2.1 Facility Inspections & Work Process Observations

Facility and work process information was collected during informal interviews, walkthrough inspections and observations in select work areas of the Teleflex Facilities. The Client representative, Mr. Steve Graham, *Building One Supervisor*, provided a site orientation prior to work commencement and accompanied the PHH ARC representative during the walkthrough.

2.2 Site Interviews & Worker Activities

Site process and worker activity information was collected during informal interviews with workers and supervisors who were involved in the exposure assessment. Additional, relevant health and safety documentation was provided by Mr. Graham to the PHH ARC representative for on-site review.

2.3 Sample Methodology

Refer to ***Appendix II*** for a description of the sample strategy and methodologies employed for this assessment.

3.0 RESULTS & DISCUSSION

3.1 Facility Inspections & Work Process Observations

Select, relevant work processes in various areas were observed during the facility inspection walkthrough and have been listed in Table 3-1 below. Refer to Photographs 1 to 3 below for a visual depiction of select ventilation controls utilized by Teleflex employees.

Table 3-1: Summary of Facility Inspection & Work Process Observations

WORK AREA	WORK PROCESS	RELEVANT OBSERVATIONS
Paint Room	Preparation and painting of select manufactured parts	• Room completely enclosed. • Select processes within room further enclosed with dedicated Local Exhaust Ventilation (LEV). • Warning signage is present and posted on entry point to room. • Preparation and component drying area segregated from paint room via wall structures. • Painter wore a loose-fitting, 3M™ Hood H-420-10, with Inner Shroud, Tychem®.
Sea Star Helm Assembly	Assembly and testing of products	• Multiple LEV systems present during soldering activities. • Workers utilized task variation and work rest cycles. • General ventilation.
Trim Sender Assembly Area	Preparation of materials, Assembly and testing of products	• General ventilation. • Potting products prepared and used on alternating shifts. • Work area between Proheat Electronic and Test Bench.

WORK AREA	WORK PROCESS	RELEVANT OBSERVATIONS
Proheat Electronics	Fine, manual hand soldering of circuit boards.	• Unleaded solder used on day of assessment. • Multiple LEV systems present during soldering activities. • General ventilation.
Welding Burlytic Area	Preparation, welding and cleaning of components.	• Welding process is automated. • Multiple LEV systems present during welding activities. • Cleaning and dipping of components is manual. • Worker did not utilize respiratory equipment.
Proheat and Test Bench	Preparation, assembly, testing and packing of heating units	• General ventilation. • LEV present (fume hood above testing area) and operated continuously during work activities. • Testing system is an enclosed process. • Signage present restricting access to area.
MBU Test Station	Preparation, assembly, testing and packing of heating units	• General ventilation. • LEV present (fume hood above testing area) and operated continuously during work activities.
Bay Star Injection Molder	Manufacturing of plastic components	• General ventilation. • LEV present and operated continuously during work activities.

Photograph 1: Paint Room with Worker Using Controls

Photograph 2: Welding Burlytic Area

Photograph 3: MBU Test Bench Area

3.2 Site Interviews & Worker Activities

Workers interviewed reported concerns related to their potential exposures to the select chemicals from adjacent work processes. Refer to Table 3-2 for a summary of select worker activities and description of the control systems utilized.

Table 3-2: Summary of Worker Activities

JOB FUNCTION	WORK TASKS	TASK FREQUENCY/ DURATION	CONTROLS UTILIZED
Proheat Electronics	• Hand soldering using leaded and non-leaded products. • Inspecting circuit boards. • Manual handling of products. • Dye Operation. • Documentation.	Throughout duration of shift	• General ventilation. • LEV. • Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures.
Trim Sender	• Manual handling of products. • Potting Chemical Mixing and Preparation. • Control Operations (Computer). • Product Testing. • Documentation.		• General ventilation. • Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures.
Burlytic Welder	• Process set-up and checks. • Application of chemicals. • Manual assembly. • Material handling. • Component cleaning. • Control operation. • Visual Inspection.		• General ventilation. • LEV. • Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures. • Nitrile gloves. • Safety glasses.
Proheat Test Bench Operator	• Process set-up and checks. • Chemical handling (fuel). • Manual assembly. • Material handling. • Packaging. • Control operation. • Visual Inspection.		• General ventilation. • Enclosed testing procedure with LEV. • Task variation. • Work/rest cycles • Standard operating procedures. • Basic decontamination procedures. • Safety glasses.

JOB FUNCTION	WORK TASKS	TASK FREQUENCY/ DURATION	CONTROLS UTILIZED
MBU Test Bench Operator	• Process set-up and checks. • Chemical handling (fuel). • Manual assembly. • Material handling. • Packaging. • Control operation. • Visual Inspection.	Throughout duration of shift	• General ventilation. • LEV. • Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures.
Painter	• Process set-up and checks. • Control operation. • Visual Inspection. • Painting. • Manual assembly. • Material handling.		• Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures. • Nitrile gloves. • Supplied air loose-fitting, 3M™ Hood H-420-10, with Inner Shroud, Tychem®.
Paint Room Prep	• Process set-up and checks. • Manual assembly. • Material handling. • Control operation. • Visual Inspection.		• Task variation. • Work/rest cycles. • Standard operating procedures. • Basic decontamination procedures. • Nitrile gloves. • Safety glasses.
Star Helm Assembly	• Process set-up and checks. • Application of chemicals. • Manual assembly. • Material handling. • Component cleaning. • Control operation. • Visual Inspection.		• General ventilation. • LEV. • Task variation. • Work/rest cycles. • Standard operating procedures. • Nitrile gloves. • Basic decontamination procedures.

3.3 Sampling Results

3.3.1 Personal Sampling

3.3.1.1 Oil Mist (Metal Working Fluids)

The oil mist, mineral severely refined (metal working fluids) and total particulate exposures of the workers were below the WSBC 8-hour Time Weighted Average (TWA) Limits. Refer to Table 3-3 below for a summary of the personal sampling results.

Table 3-3: Summary of Worker Exposure to Oil Mist (Metal Working Fluids) and Total Particulate

Metal	RESULTS (mg/m^3)		8-hour TWA (mg/m^3)
	OM-01	OM-03	
	Proheat Test Bench	Star Helm Operator	
Oil Mist , Mineral, Severely Refined	<0.11	<0.11	**1.0**
Total Particulate	<0.11	<0.11	**10.0**

NOTES:
- TWA = Time Weighted Average.
- mg/m^3 = milligrams per cubic metre of air sampled.

3.3.1.2 Coal Tar Pitch Volatile (CTPV) and Total Particulate

Worker exposures CTPV and total particulate were below their respective WSBC 8-hour TWA Limits. Refer to Table 3-4 below for a summary of the personal sampling results.

Table 3-4: Summary of Worker Exposure to CTPV and Total Particulate

Metal	RESULTS (mg/m^3)		8-hour TWA (mg/m^3)
	CTPV-01	CTPV-02	
	Proheat Test Bench Operrator	MBU Test Bench Operator	
CTPV	0.052	0.086	**0.2**
Total Particulate	<0.087	0.086	**10.0**

NOTES:
- TWA = Time Weighted Average.
- mg/m^3 = milligrams per cubic metre of air sampled.

3.3.1.3 Select Metal Constituents and Total Particulate

Worker exposures to select metal constituents and total particulate were below their respective WSBC 8-hour TWAs. Refer to Table 3-5 below for a summary of the personal sampling results.

Table 3-5: Summary of Worker Exposure to Select Metal Constituents

Metal	RESULTS (mg/mg^3)				8-hour TWA (mg/m^3)
	TWP-01	TWP-02	TWP-04	TWP-05	
	Proheat Electronics	Trim Sender	Burlytic Welder #1	Burlytic Welder #2	
Aluminum	<0.002	<0.002	<0.002	<0.002	1.0^R
Antimony	<0.002	<0.002	<0.002	<0.002	0.5
Arsenic	<0.0007	<0.0007	<0.0007	<0.0007	0.01
Barium	<0.00003	<0.00003	0.00005	<0.00003	0.5
Beryllium	<0.00007	<0.00007	<0.00007	<0.00007	0.002
Boron Oxide	<0.001	<0.001	<0.0006	<0.001	10
Calcium Oxide	<0.003	<0.003	0.003	0.003	2.0
Cadmium	<0.0002	<0.0002	<0.0002	<0.0002	0.01^R
Chromium	<0.0003	0.0004	0.0047	<0.0005	0.5
Cobalt	<0.0004	<0.0004	<0.0004	<0.0004	0.02
Copper	<0.0004	<0.0004	<0.0004	<0.0004	1.0
Iron Oxide	0.0007	0.0007	0.02	0.001	5.0
Lead	<0.0007	<0.0007	<0.0007	<0.0007	0.05
Magnesium Oxide	<0.0005	<0.0005	<0.0003	<0.0005	10.0^R
Manganese	<0.00007	<0.00007	0.00049	<0.00007	0.2
Molybdenum	<0.0004	<0.0004	<0.0004	<0.0004	3.0^R
Nickel	<0.0004	<0.0004	0.0017	<0.0004	0.05
Phosphorus	<0.008	<0.009	<0.008	<0.008	0.1
Silver	<0.0003	<0.0003	<0.0002	<0.0003	0.01
Tin	<0.0007	<0.0007	<0.0007	<0.0007	2.0
Titanium Dioxide	<0.0003	<0.0003	<0.0003	<0.0003	10
Vanadium Pentoxide	<0.0005	<0.0005	<0.0004	<0.0005	0.2
Zinc Oxide	<0.0003	<0.0003	<0.0003	<0.0003	2.0^R

Metal	RESULTS (mg/mg^3)				8-hour TWA (mg/m^3)
	TWP-01	TWP-02	TWP-04	TWP-05	
	Proheat Electronics	Trim Sender	Burlytic Welder #1	Burlytic Welder #2	
Zirconium	<0.0004	<0.0004	<0.0004	<0.0004	**5.0**
Total Particulate	0.08	0.11	0.17	0.18	**10.0**

NOTES:

- < = Less than the limit of detection for the laboratory analytical methodology employed.
- TWA = Time Weighted Average.
- mg/m^3 = milligrams per cubic metre of air sampled.
- **R** = chemical has only a respirable or inhalable TWA Limit.

3.3.1.4 Select Volatile Organic Compounds

Worker exposures to select volatile organic compounds (VOC) were below their respective WSBC 8-hour TWA Limits. Refer to Table 3-6 below for a summary of the personal sampling results.

Table 3-6: Summary of Worker Exposure to Select Volatile Organic Compounds

CHEMICAL	RESULTS (ppm)		8-hour TWA (ppm)
	VOC-01	VOC-02	
	Painter A	Painter B	
Benzene	<0.0068	<0.0066	0.05
Ethylbenzene	0.015	0.0098	100
Methyl ethyl ketone	<0.022	<0.022	50
Methyl isobutyl ketone	<0.016	<0.016	50
n-Butyl Acetate	0.016	<0.013	200
Toluene	0.029	<0.011	20
Xylene	0.073	0.051	100

NOTES:

- < = Less than the limit of detection for the laboratory analytical methodology employed.
- TWA = Time Weighted Average.
- ppm = parts per million.

3.3.1.4 Carbon Dioxide, Carbon Monoxide, Nitrogen Dioxide and Sulphur Dioxide

Worker exposures to carbon dioxide, carbon monoxide, nitrogen dioxide and sulphur dioxide were below their respective WSBC 8-hour TWA Limits. Refer to Table 3-7 below for a summary of the personal sampling results.

Table 3-7: Summary of Worker Exposure to Carbon Dioxide, Carbon Monoxide, Nitrogen Dioxide and Sulphur Dioxide

CHEMICAL	RESULTS (ppm)		8-hour TWA (ppm)
	CMB-01	CMB-02	
	Proheat Tester	MBU Tester	
Carbon Dioxide	585	819	5,000
Carbon Monoxide	0	0	25
Nitrogen Dioxide	0	0	1*
Sulphur Dioxide	0	0	2

NOTES:

- TWA = Time Weighted Average.
- ppm = parts per million.
- * = Ceiling Limit.

Refer to ***Appendix III*** for copies of the laboratory analytical results.

3.3.2 Area Sampling

For the purposes of area sampling, the WSBC TWA Limits are only used as guidelines for the work environment where these samples have been collected. Note these results should not be necessarily considered indicative of personal exposures. Worker exposures will vary depending on their job function, daily work activities and frequency of occupation in their respective work areas.

Area airborne concentrations of carbon monoxide, carbon dioxide, sulphur dioxide, nitrogen dioxide, total particulate and select volatile organic compounds were below their respective guideline levels.

Based on the very low airborne concentrations of chemicals measured it is unlikely that if workers were to spend their entire shift in the area that an overexposure would occur. Refer to Table 3-8 and 3-9 below for a summary of the respective area sampling results.

Table 3-8: Summary of Worker Exposure to Carbon Dioxide, Carbon Monoxide, Nitrogen Dioxide, Sulphur Dioxide and Total Particulate

CHEMICAL	RESULTS (ppm)		8-hour TWA Guideline (ppm)	8-hour TWA Guideline (mg/m^3)
	TP-01	TP-02		
	Building 3 Column D4	Building 3 Desk Adjacent Grinder Area		
Carbon Dioxide	392	293	5,000	-
Carbon Monoxide	2	1	25	-

CHEMICAL	RESULTS (ppm)		8-hour TWA Guideline (ppm)	8-hour TWA Guideline (mg/m^3)
	TP-01	TP-02		
	Building 3 Column D4	Building 3 Desk Adjacent Grinder Area		
Nitrogen Dioxide	0	0	1*	-
Sulphur Dioxide	0	0	2	-
Total Particulate	0.08	0.05	-	10

NOTES:
- < = Less than the limit of detection for the laboratory analytical methodology employed.
- TWA = Time Weighted Average.
- - = exposure to specific chemical not evaluated, based on designed sampling strategy.
- ppm = parts per million.
- mg/m^3 = milligrams per cubic metre of air sampled.
- * = Ceiling Limit.

Table 3-9: Summary of Area Sampling Results – Select Chemicals

SAMPLE #	CHEMICAL	SAMPLE LENGTH (hours)	SAMPLE RESULT (ppm)	8-hour TWA GUIDELINE (ppm)
VOC-03	Benzene	8	<0.0067	0.05
	Ethylbenzene		<0.0099	100
	Methyl ethyl ketone		<0.022	50
	Methyl isobutyl ketone		<0.016	50
	n-Butyl Acetate		<0.014	200
	Toluene		<0.011	20
	Xylene		<0.020	100
F-01	Formaldehyde		0.0024	0.3

NOTES:
- < = Less than the limit of detection for the laboratory analytical methodology employed.
- TWA = Time Weighted Average.
- ppm = parts per million.

Refer to ***Appendix III*** for copies of the laboratory analytical results.

3.3.3 Compressed Breathing Air Sampling

The Paint Booth's compressed breathing air sample collected from the Atlas Coro Gaso GA 50 VSD (Serial No. 352333) met and conformed to the maximum allowable requirements of *CSA Z180.1-00-Compressed Breathing Air.* Refer to ***Appendix III*** for the laboratory analytical results and the Certificate of Conformance for the breathing air system tested.

3.4 Assessment Limitations

During the assessment, the Bay Star Molder Injection Station was not operational in Building 3 during the duration of the study. However, a similar injection station was operating in Building 2, therefore, the sample was collected in Building 2 due to this production limitation. PHH confirmed with Mr. Graham that the processes were similar with the exception of the different location.

4.0 CONCLUSIONS & RECOMMENDATIONS

Based on this assessment, PHH ARC concludes and recommends:

1. Workers were not at risk of overexposure to the select chemicals sampled at the time of the assessment. Note, however, that several identified chemicals are designated substances under the WSBC OHSR; these substances are present in materials utilized within the facility (based on a comprehensive review of the respective Material Safety Data Sheets). These chemicals include, but are not limited to:

   - Benzene
   - Formaldehyde
   - Select metal constituents

   Therefore, as per Sections 5.57 and 5.54 of the WSBC OHSR, Teleflex is required to develop and implement an Exposure Control Plan for each respective contaminant. This document must include the following sections, at the minimum:

   (a) Statement of purpose and responsibilities;
   (b) Risk identification, assessment and control;
   (c) Education and training;
   (d) Written work procedures;
   (e) Hygiene facilities and decontamination procedures;
   (f) Health monitoring, when required; and
   (g) Documentation.

2. Area levels of carbon monoxide, carbon dioxide, sulphur dioxide, nitrogen dioxide, total particulate and select volatile organic compounds do not indicate a potential for elevated worker exposure.

3. The collected sample of supplied breathing air from the Paint Booth's compressed breathing air apparatus met and conformed to the maximum allowable requirements of the *CSA Z180.1-00-Compressed Breathing Air*.

5.0 LIMITATIONS

The work performed by PHH ARC Environmental Ltd. was conducted in accordance with generally accepted industrial hygiene, engineering, or scientific practices current in this geographical area at the time the work was performed. No warranty is either expressed or implied by furnishing written reports or findings. The Client acknowledges that subsurface and concealed conditions may vary from those encountered or inspected. PHH ARC Environmental Ltd. can only comment on the environmental conditions observed on the date(s) the assessment is performed. The work is limited to those areas of concern identified by the Client or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assignment.

Samples that were collected and found to be other than non-hazardous waste may be returned to the Client at the sole discretion of PHH ARC Environmental Ltd.

PHH ARC Environmental Ltd. makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time. PHH ARC Environmental Ltd. accepts no responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The liability of PHH ARC Environmental Ltd. or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. PHH ARC Environmental Ltd. will not be responsible for any consequential or indirect damages. PHH ARC Environmental Ltd. is only liable for damages resulting from negligence of PHH ARC Environmental Ltd. All claims by the Client shall be deemed relinquished if not made within two years after last date of services provided. Information provided by PHH ARC Environmental Ltd. is intended for Client use only. PHH ARC Environmental Ltd. will not provide results or information to any party unless disclosure by PHH ARC Environmental Ltd. is required by law. Any use by a third party of reports or documents authored by PHH ARC Environmental Ltd. or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. PHH ARC Environmental Ltd. accepts no responsibility for damages suffered by any third party.

Authored By:
PHH ARC Environmental Ltd.
Per:

Aaron Wildgrove, Dipl. T. (OHS)
Project Coordinator

Reviewed By:
PHH ARC Environmental Ltd.
Per:

Craig Yee, M.Sc. (OEH), *CRSP®*
Industrial Hygienist/Senior Project Manager

Appendix B Workplace Monitoring Policy

Teleflex®

WORKPLACE MONITORING POLICY CD138

Effective Date: October 2009
Approved By: T.Curley
Sponsored By: HR

Objective:

With a focus on quality and care for workers' safety, a monitoring program to ensure potential exposure to hazardous substances are identified and risk mitigation incorporated.

Scope:

This policy covers all areas of the business in which a presence of hazardous substances and/or material may be in contact by an employee.

Definitions

Exposure Control Plan: OH&S Regulation, 5.54: A written procedure to control/mitigate airborne exposure risk to employees.

Exposure Limits: OH&S Regulation, 5.48: A established time limit to the exposure of hazardous materials based on the particular hazardous material.

Hazardous Area: OH&S Regulation, 1.1: an area in a workplace where a hazard exists, or is created, due to a condition in the area or the activities conducted in it.

Hazardous Material: a substance or product which presents a hazard to an individual with exposure though ingestion, inhalation, or through

OH&S Coordinator: An individual appointed with the secondary duty of synchronize and administer OH&S matters within the facility to ensure compliance. In concert with those accountable for OH&S within their sphere of control, the coordinator will provide guidance and direction as a Subject Matter Expert, and as required, solicit services of 'outside the facility' professionals to accommodate requirements.

EHS Representative: See OH&S Coordinator

Responsibility:

All production managers and supervisors are responsible for the day to day assessment of OH&S issues pertaining to the production area.

Production Management is responsible for monthly OH&S audits being conducted, recorded and shared with the Occupational Health and Safety Committee.

The Occupational Health & Safety Coordinator will ensure the application of this Policy and report actions in accordance with this policy, is recorded with the Occupational Health and Safety Committee and noted in the minutes.

Application:

Monthly: A walkthrough of the facility both internal and external to survey the potential for overexposure of hazardous material/substances into account for all routes of exposure, including inhalation, ingestion, and skin contact. The results of which will be recorded on the monthly OH&S Audit sheet by building and presented to the Occupational Health and Safety Committee.

Annually: An air quality test will be conducted for all manufacturing areas where there is a presence of hazardous materials if there have been any changes in the area since the last air quality test. The results will be posted in the Occupational Health and Safety section of Teleflex Canada's Intranet and shared with the Occupational Health and Safety Committee.

Changes to Current Cell Set-Up: any change to a workspace in production will have a walkthrough survey conducted to determine if there is an increase in the potential exposure of a hazardous material. The results will be recorded in the change documents for the Cell and shared with the Occupational Health and Safety Committee.

New Process or Cell Design: a new cell, work process or the introduction of new equipment/machinery will require a walkthrough survey to be conducted to determine the presence of a hazardous material. If a hazardous material is present in the new cell or process, an air quality test will be conducted prior to full production. The results will be recorded and shared with the Occupational Health and Safety Committee.

Presence of an Unsafe Level of Hazardous Material:

In the event that a walkthrough survey shows the potential exposure to hazardous materials, an air quality test will be ordered without delay by Employee Services.

In the event that the air quality reveals that a worker may be exposed to an air contaminant in excess of 50% of its exposure limit, or measurement is not possible at 50% of the applicable exposure limit, work will cease and an Exposure Control Plan in accordance with OH&S Regulation 5.54 will be implemented prior to any additional work being conducted in that area.

Changes, adjustments, or alteration to work areas or cells where an Exposure Control Plan in place, cannot be adjusted without the involvement of Employee Services and the Occupational Health & Safety Coordinator.

END

Annex: Occupational Health and Safety Regulation 5.53 & 5.54

5.53 Workplace monitoring

(1) If a worker is or may be exposed to a hazardous substance, the employer must ensure that

(a) a walkthrough survey is conducted to assess the potential for overexposure taking into account all routes of exposure, including inhalation, ingestion, and skin contact, and

(b) reassessment is conducted when there is a change in work conditions which may increase the exposure, such as a change in production rate, process or equipment.

(2) If the walkthrough survey required by subsection (1) reveals that a worker may be at risk of overexposure to an airborne contaminant, the employer must ensure that air sampling is conducted to assess the potential for overexposure.

(3) Additional workplace monitoring to reliably determine worker exposure is required if

(a) the assessment under subsection (2) reveals that a worker may be exposed to an air contaminant in excess of 50% of its exposure limit,

or

(b) measurement is not possible at 50% of the applicable exposure limit.

(4) Workplace exposure monitoring and assessment must be conducted using occupational hygiene methods acceptable to the Board.

(5) The results of workplace exposure monitoring and assessment, or a summary of the results, must be provided to workers at their request without undue delay.

Note: See also section 5.2 which provides general requirements to prevent overexposure by any route.

5.54 Exposure control plan

(1) An exposure control plan must be implemented when

(a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit,

(b) measurement is not possible at 50% of the applicable exposure limit, or

(c) otherwise required by this Regulation.

(2) The exposure control plan must incorporate the following elements:

(a) a statement of purpose and responsibilities;

(b) risk identification, assessment and control;

(c) education and training;

(d) written work procedures, when required;

(e) hygiene facilities and decontamination procedures, when required;

(f) health monitoring, when required;

(g) documentation, when required.

(3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable.

END

Appendix C Job Training Progress Form

Teleflex®

Teleflex Canada

Job Training Progress –Form "B"
(for Production Workers at Machines)

CF085

Employee Name: _____ Employee Number: _____

Machine Number: _____ Date: _____

Process	Initial:	Employee	Trainer	Leader	Machinist Foreman (Training)	Manager
START UP						
• Start Up						
• Check Program						
• Check worn inserts and tools						
• Loading and unloading parts						
• Hand Tools secured with chain (if applicable)						
• Inspect first part						
• De-burr						
MACHINE CONTROL INFORMATION						
• Control panel						
• Bar Feeder						
• Pallet Change and Recognition						
• Manual Coolant Operation						
MEASURING INSTRUMENTS						
• Micrometer						
• Vernier Caliper						
• Height Gauge						
• Bore Gauge						
• Air Gauge						
• Surface Finish Gauge						
INSPECTION						
• Read Drawings						
• Histogram and SPC Charts						
• Non Conformance Parts						
• Final Inspection						
• Scrap Log						
MAINTENANCE						
• Daily Routine Maintenance						
• Weekly Coolant Change						
• Machine Clean-up						
• Air Lubrication						
• 5S Procedures						
TROUBLESHOOTING						
• Set Up Sheet						
• Offset Adjustments						
• Change Inserts						
• Change Tools						
• Inspect Part After Adjustments						
• Restart Cycle						
SAFETY						
• Refer to CD081						

Sign Off (initial) of this form indicates that employee has demonstrated ability to consistently meet the following Target Performance Levels:

- Work Safely and follow 5S procedures
- Produce product with zero defects
- Produce at a rate of 100% of standard time
- Follow all Employee Handbook expectations of conduct

This form is to be filed in the employee's record by Employee Services

Content File: CF85.doc Content Revision: Nov. 03, 2010 Content Issuing Authority: Plant Manager Content Controlled per Master List	*Controlled Locations:* Source: Intranet Records: Supervisor	Form Template: CF85.doc Form Template Revision: Jul 20, 2005 Template Issuing Authority: Manager, Safety and Training Controlled per CF Master List at Teleflex Canada

Appendix D Teleflex Workplace Monitoring Policy

Teleflex®

Teleflex Canada

ACCIDENT / INCIDENT INVESTIGATION REPORT

CF151

First Aid Attendant to Complete

Worker's Last Name	First Name	Middle Initial	Phone Number
Mailing Address			**Gender** ❑ Male ❑ Female
City	**Province**	**Postal Code**	**Date of Birth** {mm/dd/yyyy}

Accident / Incident Investigation Team to Complete

Length of Service w/Teleflex: Yrs. Mos. **Time on Present Job:** Yrs. Mos.		**Nature of Event:** ❑ Dangerous Occurrence ❑ First Aid ❑ Medical Treatment Only ❑ Worker Injury
Department:	**Occupation:**	
Date and Time of Accident/Injury {mm/dd/yyyy} hh:mm (Using 24Hr)		**Approximate?** Yes ❑ No ❑
(or) Period of Exposure From: {mm/dd/yyyy} To: {mm/dd/yyyy} hh:mm (Using 24Hr)		**Approximate?** Yes ❑ No ❑

Event Witness Name(s):	**Investigator Name(s):**
Employee's Signature:	**Date:**

Report Completed:

❑ Personal Interview ❑ Interview via Telephone

❑ Other (Please Specify) **Date:**

Circulate & Initial :

❑ Department Supervisor ❑ Department Manager ❑ Manager (ES) ❑ President

Content File: CF151.doc Content Revision: Mar. 04, 2009 Content Issuing Authority: Director, Human Resources Content Controlled per Master List	*Controlled Locations:* Source: Intranet Records: Employee Services	Form Template: CF151.doc Form Template Revision: July 22, 2005 Template Issuing Authority: Director, Human Resources Controlled per CF Master List at Teleflex Canada

Teleflex®

Teleflex Canada

ACCIDENT / INCIDENT INVESTIGATION REPORT

CF151

Description of the Incident *(Where applicable, please give detailed description of structures, and makes, models, and serial numbers of equipment and tools involved in this accident. Use a second page if necessary, Also attach photographs if appropriate.)*

Accident Cause(s)

Contributing Factor(s)

Preventative Action(s)

Recommended Follow-up Action:

Content File: CF151.doc Content Revision: Mar. 04, 2009 Content Issuing Authority: Director, Human Resources Content Controlled per Master List	*Controlled Locations:* Source: Intranet Records: Employee Services	Form Template: CF151.doc Form Template Revision: July 22, 2005 Template Issuing Authority: Director, Human Resources Controlled per CF Master List at Teleflex Canada

Appendix E Hand Protection Policy

Teleflex®

Personal Protective Equipment (PPE)
Hand Protection Policy
Oct. 10, 2007 – Richmond, BC Facilities

CD113

Effective Date: 10 Oct. 2007
Approved By: Asst. Plant Mgr., Joel Cherewyk
Sponsored By: HR, T. CURLEY

Background:

The fact that injuries to the hands and fingers remains the prevalent cause of first aid room visits may not be surprising, almost everything we do is actually done by people with their hands. But what may be surprising is how many of these cases are serious enough to cause lost workdays. According to Bureau of Labour Statistics, more than one-sixth of the total lost time injuries or illnesses are related to the hands and fingers.

General Requirements:

Teleflex shall select and require employees to use the appropriate hand protection when the employees' hands are exposed to potential hazards such as those from skin absorption of harmful substances; cuts or lacerations; abrasions, punctures, chemical exposure, thermal burns or harmful temperature extremes. The lack of a visible hazard does not preclude the use of gloves protection. For these reasons, a variety of gloves are available and the selection information is detailed by a five step process for selecting the hand protection appropriate to the task on the Hand Protection .

Selection:

Employers shall base the selection of the appropriate hand protection on the evaluation of the performance characteristics of the hand Protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

Restriction of use of Hand Protection:

There are situations involving powered equipment where the guarding provided by the equipment provides a safe operational situation for an ungloved hand, but can result in serious injury to a gloved hand (such as work on rotating equipment). For this reason, gloves are not to be worn when and where they can get caught in powered equipment or machinery.

5 Step Process
Selecting Hand Protection (Gloves)

Choose the appropriate Glove for your application.

To select a glove, follow the five (5) step process.

1. Evaluate the environment that the glove will be required to perform in (i.e. assembly).
2. Determine how much protection is needed against abrasion, cut, puncture and tears.
3. Determine the degree of flexibility and dexterity required for the application.
4. Evaluate the need for physical and chemical resistance specific to the tasks.
5. Choose the gloves that offer appropriate protection and performance.

Content File: CD113.doc Content revision: Oct 10, 2007 Content Issuing Authority: Asst. Plant Manager Content Controlled per master List	Controlled Locations: Source: Intranet Copies: Posted in Facilities Title: **(PPE) Hand Protection**	Form Template: CD113.doc Form Template Revision: Oct 10, 2007 Template Issuing Authority: Asst. Plant Manager Controlled per CD Master List at Teleflex Canada

Glove Selection Guide

Colour Code	Okay to Use	Caution	Do not Use

Glove	Characteristics	Assembly	Deburring/ Packaging	Handling Fluid	Rotating Equipment
	**Disposable Nitrile Glove** Use in light or intermittent manufacturing and assembly: • Excellent flexibility and dexterity. • Poor protections from sharp or abrasive objects. • Impermeable barrier to mild solvents, coolants and oils.	Yes	Never Use	Yes	Never Use Gloves
	**Polyurethane Palm Coated Glove** Application is for continuous manufacturing and assembly. • Minimal protection from sharp, cut or abrasive objects; • Good flexibility and dexterity. • Minimal protection to fluids.	Yes	Minimal Protection	Minimal Protection (Cloth back)	Never Use Gloves
 *Also comes in **Black***	**Nitrile Palm Coated Glove** Application is for continuous manufacturing and assembly. • Good protection from sharp, cut or abrasive objects; • Good flexibility and dexterity. • Minimal protection to fluids.	Yes	Yes	Minimal Protection (Cloth back)	Never Use Gloves
	**Leather Glove** Application is multi-purpose, intended for packaging, material handling and material movement. • Not to be used for fluid handling; • Not to be used around rotating equipment; • Poor flexibility and dexterity.	Poor Flexibility	Yes	Never Use	Never Use Gloves
	**Green Solvent Resistant Glove** Use for fluid handling providing an impermeable barrier to protect the hand; • Only moderate protection from sharp or abrasive objects; • Offers average flexibility and dexterity.	Average Dexterity	Average Dexterity	Yes	Never Use Gloves

Appendix F Wearing Safety Glasses Policy

WEARING SAFETY GLASSES POLICY CD148

Teleflex®

MEMORANDUM

Teleflex Canada
3831 No. 6 Road
Richmond, B.C. V6V 1P6 Canada
Phone: 604-270-6899
Fax: 604-303-2899
WWW.TELEFLEXCANADA.COM

Date: March 4, 2011

To: All Teleflex Canada Staff

From: Yvan Cote, President, Marine Group

Subject: Wearing Safety Glasses

Employee safety is a very important issue and one to be taken seriously, especially in manufacturing facilities such as ours. Over the past few visits throughout the Group and in all facilities, I have noticed that safety glasses are not worn as required by all employees at all levels.

I would like to remind all employees that it is mandatory to wear the proper safety equipment, in particular, safety glasses in the designated areas of the plant. It is not appropriate to wear safety glasses hanging around your neck or on top of your head like sunglasses when moving around on the shop floor.

I ask that you always wear your safety glasses when required and I also encourage you to remind your fellow employees to put them on if they happen not to be wearing them. This includes your managers, supervisors or anyone walking you may see walking around the floor.

Going forward this will be a policy that will be enforced at all facilities and if an employee at any level is found not wearing their glasses, disciplinary action will be taken.

Thank-you for your co-operation.

Yvan Cote
President
Marine Group

Content File: CD148.doc Content Revision: Mar. 04, 2011 Content Issuing Authority: President, Marine Content Controlled per master List	Controlled Locations: Source: Intranet Copies: Posted in Facilities Title: **Wearing Safety Glasses Policy**	Form Template: CD148.doc Form Template Revision: Mar. 04, 2011 Template Issuing Authority: President, Marine Controlled per CD Master List at Teleflex Canada

Appendix G Dress Code

Teleflex®

Teleflex Canada Inc.
Richmond, BC

CD134

DRESS CODE

Shop Floor Employees

All shop floor employees are required to wear the following:

- Steel toed boots/shoes
- Safety glasses
- High-visibility vests when traveling through areas with mobile equipment traffic

After 3 months of continuous full time employment, Maintenance will issue hourly employees coveralls or lab coats with their names embroidered. Attire other than coveralls/coats for the shop floor employee must meet WCB regulations. This means that attire should be:

- Suitable to the job or activity and to the environment in which the job or activity is performed (i.e. no loose clothing that could cause a safety hazard by being caught in equipment);
- Acceptable to the "social and safety standards" of the environment in which the job or activity is performed.

Office Employees

The dress code for office staff is not very formal, but should be suitable for the nature of the work activity (i.e. business attire for external meetings or visiting guests, more casual for in-office work activities). Common sense determines what an office employee wears to work at Teleflex, however, the majority of office employees will dress in what is defined as either Business or Business Casual attire:

- Business: Business suit, or dress slacks and jacket with shirt and tie; or, matching suit, dress, skirt and blouse, possible with jacket; and for all persons, socks or stockings and shoes professionally compatible with one's attire.

- Business Casual: Slacks, khakis, skirt or dress, sport shirt or blouse with collar and/or sleeves, sweater, possible a jacket, maybe a tie, socks (stockings optional) and shoes other than recreational footwear or casual sandals.

When work is performed in a manufacturing facility, the WCB requires proper cover and footwear with appropriate soles and toe protection. Well-maintained jeans are acceptable; while older jeans are acceptable when clothing is subject to rough wear.

On Fridays (and other days when announced from time to time), office employees are permitted to wear a relaxed standard of dress but should meet or exceed the following Casual attire guidelines.

- Casual: Jeans, slacks, golf shirts, socks, soft soled recreational shoes (except in shop and lab areas where WCB regulations apply).
- Flip flops, open toed sandals and shorts are not to be worn to work as this is a manufacturing facility and all employees may have a need to access the manufacturing area in the course of their duties.

This policy applies to all Teleflex employees and includes visitors, guest and anyone else that may have access to our facility.

Content File: CD134.doc Content revision: June 11, 2009 Content Issuing Authority: Dir., Human Resources Content Controlled per master List	Controlled Locations: Source: Intranet Copies: Posted in Facilities Title: **Dress Code**	Form Template: CD134.doc Form Template Revision: June 11, 2009 Template Issuing Authority: Dir., Human Resources Controlled per CD Master List at Teleflex Canada

Appendix H Eating or Open Food

Teleflex®

CD135

EMPLOYEE NOTICE

Eating or Open Food
Within the Manufacturing Facility and Laboratories

As a result of our internal OH&S audit, it was observed that food was being consumed in the cells, the following is advised:

Open food or consuming food in the work cell, on the production floor, or in the facility labs is not allowed.

Personal hygiene and health risks associated with contamination to open food in these areas require care in ensuring that individuals do not consume food or drink from an open container while working in the cells or in production activities.

Further, contamination of assembly or production of goods could occur because of food inveterately being dropped into the process.

Employees are requested not to bring food products onto the floor, but to use the lunchrooms during normal break periods.

Director of Operations
Teleflex Canada Inc.

Content File: CD135.doc Content revision: July 21 2009 Content Issuing Authority: Director of Operations Content Controlled per master List	Controlled Locations: Source: Intranet Copies: Posted in Facilities Title: **Eating or Open Food**	Form Template: CD135.doc Form Template Revision: July 21 2009 Template Issuing Authority: Director of Operations Controlled per CD Master List at Teleflex Canada

Appendix I Respirator Protection Plan

Teleflex®

Teleflex Canada

Respirator Protection Program

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0.0 PURPOSE

Teleflex Canada. has determined those specific employees in the paint room; assembly, engineering, machine shop, and maintenance departments may be exposed to respiratory hazards during routine operations. These hazards include particulates, and vapors. The purpose of this program is to ensure that all Teleflex Canada. employees are protected from exposure to these respiratory hazards.

Engineering controls, such as ventilation and substitution of less toxic materials, are the first line of defense at Teleflex Canada.; however, engineering controls have not always been feasible for some of our operations, or have not always completely controlled the identified hazards. In these situations, respirators and other protective equipment must be used. The work processes requiring respirator use at Teleflex Canada. are outlined in Table 1 in the Scope and Application sections of this program.

In addition, some employees have expressed a desire to wear respirators during certain operations that do not require respirator protection (nuisance odors). As a general policy, Teleflex Canada. will review each of these requests on a case-by-case basis. If the use of respiratory protection in a specific case will not jeopardize the health or safety of the worker(s), Teleflex Canada. will provide respirators for voluntary use. As outlined in the Scope and Application section of this program, voluntary respirator use is subject to certain requirements of this program.

1.0 SCOPE AND APPLICATION

This program applies to all employees who are required to wear respirators during normal work operations, and during some non-routine or emergency operations such as a spill of a hazardous substance. This includes employees in the Paint Room, Assembly, Maintenance, Machine Shop, and engineering departments. All employees working in these areas and engaged in certain processes or tasks (as outlined in the table below) must be enrolled in the company's respiratory protection program.

In addition, any employee who voluntarily wears a respirator with organic vapor cartridges, when a respirator is not required (i.e., Prep and assembly employees who at times are required to enter the Paint Room), is subject to the medical evaluation, cleaning, maintenance and storage elements of this program, and must be provided with certain information specified in this section of the program.

Employees participating in the respiratory protection program do so at no cost to them. The expense associated with training, medical evaluations and respiratory protection equipment will be borne by the company.

TABLE 1: VOLUNTARY AND REQUIRED RESPIRATOR USE AT TELEFLEX CANADA LTD	
RESPIRATOR	**DEPARTMENT / PROCESS**
Dust, Fume, and Mist Respirators TC-21C (CSA Standard Z94.4-93 Appendix G4.3 – G4.4)	Voluntary use for workers (nuisance odors).
Chemical cartridge, or combination chemical cartridge respirators TC-23C (CSA Standard Z94.4-93 Appendix G4.1 – G.4.2) 3M 7002S Dual cartridge half facepiece (medium) 3M 6300 Dual cartridge half facepiece (large) 3M 6200 Dual cartridge half facepiece (medium) 3M 6100 Dual cartridge half facepiece (small)	Prep and Assembly. Voluntary use for painters when cleaning spray booth walls or changing spray booth filter. Voluntary and required use by maintenance and engineering (assessed on an as required basis).
Supplied-air (air line) Respirator TC-19C (CSA Standard Z94.4-93 Appendix G3.3.2) Compressed air filter and regulator panel Model W - 2806 Grade D breathing air 29 CFR 1910.134 (d) (1)	Spray booth operations.

2.0 RESPONSIBILITIES

PROGRAM ADMINISTRATOR

The Program Administrator is responsible for administering the Respiratory Protection Program and where necessary to the proper functioning of the Respiratory Protection Program, consult with users and other people knowledgeable in occupational health, occupational hygiene, safety, and industrial
processes.

DUTIES OF THE PROGRAM ADMINISTRATOR INCLUDE:

- Identifying work areas, processes or tasks that require workers to wear respirators, and evaluating hazards.
- Selection of respiratory protection options.
- Monitoring respirator use to ensure that respirators are used in accordance with their certifications.
- Arranging for and/or conducting training.
- Ensuring proper storage and maintenance of respiratory protection equipment.
- Conducting or providing qualified instructors to conduct qualitative fit testing with (BITTER).
- Administering the medical surveillance program.
- Maintaining records required by the program.
- Evaluating the program.
- Updating the written program, as needed.

The Program Administrator for Teleflex Canada. is Assistant Plant Manager(s)

SUPERVISORS

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their particular areas. In addition to being knowledgeable about the program requirements for their own protection, supervisors must also ensure that the program is understood and followed by the employees under their charge. Duties of the supervisor include:

- Ensuring that employees under their supervision (including new hires) have received appropriate training, fit testing and annual medical evaluations.
- Ensuring the availability of appropriate respirators and accessories.
- Being aware of tasks requiring the use of respiratory protection.
- Enforcing the proper use of respiratory protection when necessary.
- Ensuring that respirators are properly cleaned, maintained, and stored according to the respiratory protection plan.
- Ensuring that respirators fit well and do not cause discomfort.
- Continually monitoring work areas and operations to identify respiratory hazards.
- Coordinating with the Program Administrator on how to address respiratory hazards or other concerns regarding the program.

EMPLOYEES

Each employee has the responsibility to wear his or her respirator when and where required and in the manner in which they were trained. Employees must also:

- Care for and maintain their respirators as instructed, and store them in a clean sanitary location (Plastic container labeled with their names is provided for each mask; if unavailable, a clean plastic bag will suffice).
- Inform their supervisor if the respirator no longer fits well, and request a new one that fits properly.
- Inform their supervisor or the Program Administrator, of any respiratory hazards that they feel is not adequately addressed in the workplace and any other concerns that they have regarding the program.

3.0 PROGRAM ELEMENTS

SELECTION PROCEDURES

The Program Administrator will select respirators to be used on site, based on the hazards to which workers are exposed and in accordance with all Workers Compensation Board (WCB) regulations and CSA Standards. The Program Administrator will conduct a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency. The hazard evaluation will include:

1. Identification and development of a list of hazardous substances used in the workplace, by department, or work process.

2. Review of work processes to determine where potential exposures to these hazardous substances may occur. This review shall be conducted by surveying the workplace, reviewing process records, and talking with employees and supervisors.

3. Exposure monitoring to quantify potentially hazardous exposures. Monitoring will be contracted out. Teleflex Canada. has a contract with PHH Laboratories through Employee Services.

The results of the current hazard evaluation are the posted on the Intranet under OH&S AirQuality

UPDATING THE HAZARD ASSESSMENT

The Program Administrator, along with ES will revise and update the hazard assessment as needed (i.e., anytime the work process changes, it may potentially affect exposure). If an employee feels that respiratory protection is needed during a particular activity, he/she is to contact his or her supervisor or the Program Administrator. The Program Administrator will evaluate the potential hazard, arranging for outside assistance as necessary. The Program Administrator will then communicate the results of that assessment back to the employees. If it is determined that respiratory protection is necessary, all other elements of this program will be in effect for those tasks and this program will be updated accordingly.

CSA CERTIFICATION

All respirators must be certified by the Canadian Standards Association of Canada (CSA) Standard Z94.4-93 and shall be used in accordance with the terms of that certification. Also, all filters, cartridges, and canisters must be labeled with the appropriate CSA approval label. The label must not be removed or defaced while it is in use.

VOLUNTARY RESPIRATOR USE

Teleflex Canada will provide respirators at no charge to employees for voluntary use for the following work processes:

- Painters may wear a TC-23C while cleaning spray booth walls and filters.
- Prep and assembly workers may wear a TC-23C when performing tasks in the paint room.
- Maintenance workers may wear a TC-23C (the program Administrator must approve each new application).
- Engineers may wear a TC-23C (the Program Administrator must approve each new application).

The Program Administrator will provide all employees who voluntarily choose to wear the above respirator with a copy of Appendixes A, B, C, F, and G of the standard. (These Appendixes detail the requirements for Selection, Use and Care of Respirators) Employees choosing to wear a TC-23C must comply with the procedures for Medical Evaluation, Respirator Use, and Cleaning, Maintenance and Storage.

The Program Administrator shall authorize voluntary use of respiratory protective equipment as requested by all other workers on a case-by-case basis, depending on specific workplace conditions and the results of the medical evaluations.

MEDICAL EVALUATION

If a worker is required to use a respirator and there is doubt about the worker's ability to use a respirator for medical reasons, the worker must be examined by a physician

.

A licensed physician at "Medisys" Health Management Group, where all company medical services are provided, will provide the medical evaluations. Medical evaluation procedures are as follows:

- Worker must attend the scheduled appointment with the physician detailed above.
- Follow-up medical exams will be granted to employees as required by the standard, and/or as deemed necessary by the "Medisys" physician.
- After an employee has received clearance and begun to wear his or her respirator, additional medical evaluations will be provided under the following circumstances:
    - Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
    - The Medisys physician or a supervisor informs the Program Administrator that the employee needs to be reevaluated.
    - Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.
    - A change occurs in the workplace conditions that may result in an increased physiological burden on the employee.

All examinations are to remain confidential between the employee and the physician.

FIT TESTING

Fit testing is required for employees wearing TC-23Cs
Proper donning, care, and maintenance training is required for employees wearing TC-21Cs.

Employees who are required to wear TC-23Cs will be fit tested:

- Prior to being allowed to wear any respirator with a tight fitting facepiece.
- Annually.
- When there are changes in the employee's physical condition that could affect respiratory fit (e.g., obvious change in body weight, facial scarring, etc.).

Employees will be fit tested with the make, model, and size of respirator that they will actually wear. Employees will be provided with a model and size of respirators that is of optimal fit.

The Program Administrator (or a qualified substitute) will conduct fit tests using the CSA approved (Bitter) test agent.

See **Appendix A** - Teleflex Canada Fit Testing and those authorized to issue masks.

GENERAL USE PROCEDURES

- Employees will use their respirators under conditions specified by this program, and in accordance with the training they have received on the use of each particular model. In addition, the respirator shall not be used in a manner for which CSA or its manufacturer does not certify it for.

- All employees shall conduct user seal checks each time that they wear their respirator. Employees shall use either the positive or negative pressure check (depending on which test works best for them) specified in Appendixes A3 and A4 of CSA Standard Z94.4-93 (Selection, Use, and Care of Respirators).

- All employees shall be permitted to leave the work area to maintain their respirator for the following reasons: to clean their respirator if the respirator is impeding their ability to work, change filters or cartridges, or to inspect their respirator if it stops functioning as intended. Employees should notify their supervisors before leaving the area.

- Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the face piece-to-face seal.

EMERGENCY PROCEDURES

The following work areas have been identified as having foreseeable emergencies:

Spray Booth Cleaning Area – spill of hazardous products, malfunction of ventilation system

Paint Room – spill of hazardous products, malfunction of ventilation system

Paint Storage Room – spill or leak of hazardous substances, blockage of free air system

Pro Heat Assembly – Spill or leak of Instapack Component A

Fuel Flow Assembly – Spill of Toluene

When a spill occurs, employees in the affected area must immediately notify their supervisor and follow Teleflex Canada's Emergency Spill Clean-up Procedures. A copy of these procedures is to be given to any employee who would have occasion to come in contact with any of the above emergencies.

RESPIRATOR MALFUNCTION

1. TC-23C:

For any malfunction of a TC-23C (e.g., such as breakthrough, face piece leakage, or improperly working valve), the respirator wearer should inform his or her supervisor that the respirator no longer functions as intended, and request a new TC-23C. The supervisor must ensure that the employee receives a new TC-23C upon request. The supervisor must then ensure that the defective mask is returned to the Program Administrator for replacement.

2. Supplied-air Respirator Malfunction:

All workers wearing supplied-air respirators (TC-19C) will work with a buddy. The buddies shall assist workers who experience a TC-19C malfunction as follows:

If a worker in the spray booth experiences a malfunction of a TC-19C, he or she should signal to the buddy that he or she has had a respirator malfunction. The buddy shall aid the worker in immediately disconnecting the TC-19C and exiting the spray booth. They are to then notify their supervisor, first aid attendant, and the Program Administrator, in order of urgency.

AIR QUALITY OF SUPPLIED-AIR RESPIRATORS

CLEANING, MAINTENANCE, CHANGE SCHEDULES AND STORAGE

CLEANING

Respirators are to be regularly cleaned and disinfected at the designated respirator cleaning station (located in the first aid room).

Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary, but at least once when it has completed it's usage for that day.

Supplied-air respirators are to be cleaned and disinfected after each use.

The following procedure is to be used when cleaning and disinfecting respirators:

- Disassemble respirator, removing any filters, canisters, or cartridges.
- Wash the face piece and associated parts with an approved sanitizing agent (North 7003, respirator refresher wipe pads 70% Isopropanol).
- Rinse completely in clean, warm (50^0 F) water.
- Air-dry in a clean area.
- Reassemble the respirator.
- Place in a clean airtight container, or if not available a clean/dry plastic bag.

The Program Administrator will ensure an adequate supply of appropriate cleaning and disinfecting material at the cleaning station. If supplies are low, employees should contact their supervisor, who will notify the Program Administrator of the situation.

MAINTENANCE

Respirators are to be properly maintained at all times in order to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated masks will be replaced when found. No components will be replaced or repairs made, except by the Program Administrator and then not beyond those recommended by the manufacturer.

The following checklist will be used when inspecting respirators:

- Face piece:
  Cracks, tears, or holes
  Facemask distortion
  Cracked or loose lenses/face shields

- Headstraps:
  Breaks or tears

Broken buckles

- Valves:
  Residue or dirt
  Cracks or tears in valve material

- Filters/cartridges:
  Approval designation
  Gaskets
  Cracks or dents in housing
  Proper cartridge for hazard

- Air supply systems:
  Breathing air quality/grade D breathing air 29 CFR 1910.134 (b) (1).
  Condition of supply hoses
  Hose connections
  Settings on regulators and valves

Employees are permitted to leave their work area to perform limited maintenance on their respirator in a designated area that is free of respiratory hazards (First Aid Rooms). Situations when this is permitted include:

- washing their face and respirator facepiece to prevent any eye or skin irritation
- to replace the filter, cartridge or canister
- if they detect vapor or gas breakthrough or leakage in the facepiece
- detect any other damage to the respirator or its components

CHANGE SCHEDULES

Employees wearing TC-21Cs for protection against nuisance odors shall change the respirators when they first begin to smell the odor while wearing their masks.

Employees wearing TC-23Cs shall (at a minimum) change the cartridges on their respirators at the end of each workweek to ensure the continued effectiveness of their respirators.

STORAGE

Respirators must be stored in a clean, dry area, and (at a minimum) in accordance with the manufacturer's recommendation. Each employee will clean and inspect their own air-purifying respirator in accordance with the provisions of this program, and will store their respirators in a plastic container provided with the respirator (if lost, or unavailable, container can be substituted with a clean plastic bag). Each employee will have his/her name on the container and that container will only be used to store that employee's respirator.

Supplied-air respirators will be stored in the storage cabinet provided outside the paint room.

DEFECTIVE RESPIRATORS

Respirators that are defective or have defective parts shall be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she is to bring the defect to the attention of his or her supervisor. Supervisors will give all defective respirators to the Program Administrator. The Program Administrator will decide whether to:

- Temporarily take the respirator out of service until it can be repaired.
- Perform a simple fix on the spot such as replacing a headstrap.
- Dispose of the respirator due to an irreparable problem or defect.

When a respirator is taken out of service for an extended period of time, the respirator will be tagged out of service, and the employee will be given a replacement of similar make, model, and size. All tagged out respirators will be kept in the storage cabinet inside the Safety Coordinator's office.

TRAINING

The Program Administrator will provide training to respirator users and their supervisors on the contents of Teleflex Canada's Respiratory Protection Program and their responsibilities under it, and on the CSA Standard Z94.4-93 Selection, Use, and Care of respirators. Workers will be trained prior to using a respirator in the workplace. Supervisors will also be trained prior to using a respirator in the workplace or prior to supervising employees that must wear respirators.

The training course will cover the following topics:

- the Teleflex Canada's Respiratory Protection Program
- the CSA Standard Z94.4-93 Selection, Use, and Care of Respirators
- respiratory hazards encountered at Teleflex Canada and their health effects
- proper selection and use of respirators
- limitations of respirators
- respirator donning and user seal (fit) checks
- Fit testing
- Emergency use procedures
- Maintenance and storage
- Medical signs and symptoms limiting the effective use of respirators

Employees will be retrained annually or as needed [1](e.g., if they change departments and need to use a different respirator). Employees must demonstrate their understanding of the topics covered in the training through hands-on exercises and a written test. The Program Administrator will document respirator training and the documentation will include the type, model, and size of respirator for which each employee has been trained and fit tested.

4.0 PROGRAM EVALUATION

The Program Administrator will conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations of the workplace will include regular consultations with employees who use respirators and their supervisors, site inspections, air monitoring and a review of records.

Problems identified will be noted in an inspection log and addressed by the Program Administrator. These findings will be reported to Teleflex Canada's management, and the report will list plans to correct deficiencies in the respirator program and target dates for the implementation of those corrections.

5.0 DOCUMENTATION AND RECORDKEEPING

A written copy of this program and the CSA Standard is kept in the Employee Services' office and is available to all employees who wish to view it.

Also maintained in the Employee Services' office are copies of training and fit test records. These records will be updated as new employees are trained, as existing employees receive refresher training, and as new fit tests are conducted.

Employee Services will also maintain copies of the medical records for all employees covered under the respirator program. The physician's documented findings are confidential and will remain at Medisys Clinic. The company will only retain the physician's written recommendation regarding each employee's ability to wear a respirator.

Appendix J Exposure Control Plan

Teleflex Canada

Exposure Control Plan

CD

Effective Date: April 2012

Approved By: T.Curley

Sponsored By: HR

1.0 Introduction:

1. Objective:

This Exposure Control Plan (ECP) has been designed to ensure that the potential exposure to Designated and Hazardous Substances present in the workplace are identified and eliminated, if possible, or minimized as much as possible. The objective of this ECP is to outline the roles and responsibilities of Teleflex Canada's management, supervisors, and employees to provide guidance in establishing a safe work environment for Teleflex Canada employees who may be exposed to Designated Substances with respect to recognizing, evaluating, and controlling potential exposure to Designated Substances in the work environment.

2. Scope:

This Exposure Control Plan (ECP) has been designed to comply with WorkSafeBC's OHS regulations, Part 5 Chemical Agents and Biological Agents sections 5.54 Exposure Control Plan, and 5.57 Designated Substances, contained in Appendix III, to cover possible employee exposure to Designated or Hazardous Substances present in the workplace. This policy applies to all employees involved, exposed to, or associated with the production operations within Teleflex Canada (Curley, 2012).

3. Definitions:

ACGIH: The American Conference of Governmental Industrial Hygienists.

Carcinogen: a substance that may lead to the development of cancer

Designated Substance: a Hazardous Material which is identified as a potential carcinogen, sensitizer, or reproductive toxin in accordance with OH&S Regulation, 5.57 (Workplace Monitoring Policy, 2009).

Exposure Control Plan: a written procedure to control/mitigate airborne exposure risk to employees (Workplace Monitoring Policy, 2009).

Hazardous Material: a substance or product which presents a hazard to an individual with exposure though ingestion, inhalation, or ingestion (Workplace Monitoring Policy, 2009).

IARC: International Agency for Research on Cancer (OHS Guidlines Part 5, 2012).

Reproductive Toxin: a substance that has the potential for causing adverse reproductive effects on female and male reproductive organs, tissues, or cells; on fertility; on the embryo or fetus; and may result in developmental abnormalities; tumors; and adverse effects on the newborn (OHS Guidelines Part 5, Section 5.57(1)(b), 2012);

Sensitizer: a substance that may cause an increased reaction with accumulated exposure to the substance over time (OHS Guidlines Part 5, 2012);

8 hour TWA: Time Weighted Average (TWA) concentration of a substance in the air which may not be exceeded over a normal 8 hour work period (OHS Regulations & Related Material, 2012).

2.0 Roles and Responsibilities:

1. Director of Operations

The Director of Operations shall be responsible and accountable for:

- Endorsing this ECP document;
- Ensure proper integration of Hazardous or Designated Substances within the facility in accordance with this document;
- Ensuring all individuals within production, production support, or individuals with access to production, understands and complies with this ECP, including training and establishing due care in assessing ongoing exposure risk and process to ensure compliance with this policy and OHS Regulations (Curley, 2012); and
- Ensuring the appropriate PPE and associated safety equipment, which meets the particular requirements of substances identified in this document is available throughout the facilities (Curley, 2012).

2. Director of Engineering and Program Management

The Director of Engineering and Program Management shall be responsible and accountable for:

- Ensuring, as much as practicable, that products are designed using materials that reduce or eliminate risks to workers (OHS Guidlines Part 5, 2012) (Dudra, 2012); and
- Ensuring that awareness of Hazardous or Designated Substances required in product design or production is communicated to the Director of Operations (Curley, 2012).

3. Joint Health and Safety Committee

The Joint Health and Safety Committee shall be responsible and accountable for:

- Reviewing this ECP annually;
- Receiving and reviewing exposure assessment reports in accordance with Teleflex Canada's Workplace Monitoring Policy (2009); and
- Documenting and maintaining First Aid reports, Accident/Incident Investigation Reports (2009) and WorkSafeBC claims resulting from exposure related injuries or incidents.

4. Plant Manager(s)

The Plant Manager(s) shall be responsible and accountable for:

- Understand the contents outlined by this ECP;
- Ensuring the contents of this ECP are adhered to;
- Provide and ensure the necessary resources, support, training and PPE to ensure the health and safety of employees; and
- Establish work processes in the Work Cells containing hazardous substances identified within this ECP, which reduce the risk of exposure and safeguard workers (Curley, 2012).

5. Supervisors

Supervisors shall be responsible and accountable for:

- Being familiar with the contents of this ECP, and the Hazardous or Designated Substances in the Work Cells for which they are responsible (McMaster University, 2003);
- Conducting walkthroughs, in accordance with the Workplace Monitoring Policy(2009), of the work cells that they are responsible;
- Develop and review safe working procedures for Work Cell activities;
- Educate employees as to the health/exposure hazards within their Work Cell(s);
- Consult with Joint Health and Safety Committee as necessary (Exposure Control Plan For Designated Substances, 2011);
- Ensuring that Hazardous Materials are introduced to Work Cells in accordance with the Hazardous Material Introduction form (CF 231); and

identify if it is a Designated Substance in accordance with OHS Regulations section 5.57(2012);

- Supervise employees in the performance of their duties to ensure they are in compliance with this ECP and other Teleflex Canada policies; and
- Ensure that accidents/incidents are reported and investigated (Exposure Control Plan For Designated Substances, 2011).

6. Workers

Workers shall be responsible and accountable for:

- Familiarizing themselves and adhering to the policies and procedures as outlined by this ECP;
- Ensure that control measures are in place and PPE is worn properly in accordance with standardized Work Instructions before commencing work;
- Ensure continual use of control measures and PPE during the course of their work activities; and
- Immediately reporting any unsafe practices, processes, or conditions to their supervisor.

7. Contractors

Contractors employed by Teleflex Canada shall be responsible and accountable for:

- Familiarizing themselves and adhering to the policies and procedures as outlined by Teleflex Canada and this ECP;
- Ensure that control measures are in place and PPE is worn properly in accordance with standardized Work Instructions before commencing work;
- Ensure continual use of control measures and PPE during the course of their work activities; and
- Immediately reporting any unsafe practices, processes, or conditions to their supervisor.

3.0 Risk Identification

1. Risk Identification by Location

Appendix I, of this document, contains the Risk Identification by Location which identifies the Designated Substances present in the identified Work Cell locations as well as the level of exposure risk in each identified Work Cell.

2. Designated Substances at Teleflex

Appendix II, of this document, contains the Designated Substances present at Teleflex, and descriptions of the associated risks and potential health effects for each Substance identified at Teleflex Canada.

4.0 Assessment and Monitoring:

Assessment and monitoring of this ECP shall be carried out in accordance with Teleflex Canada's Workplace Monitoring Policy (CD 134) (2009).

1. Walkthrough Surveys

Walkthrough surveys will be conducted by Work Cell Supervisors on the following occasions:

- Monthly; (Workplace Monitoring Policy, 2009)
- After a change to a production Work Cell set up; (Workplace Monitoring Policy, 2009)
- After a change to a production process; (Workplace Monitoring Policy, 2009)
- On the introduction of new production Work Cells or equipment. (Workplace Monitoring Policy, 2009)

2. Air Quality Assessments

Air quality assessments will be conducted on the following occasions:

- Annually, provided there has been a change to production Work Cells since the last air quality assessment; (Workplace Monitoring Policy, 2009);
- On the introduction of new production Work Cells or equipment; and(Workplace Monitoring Policy, 2009)
- In the event that a walkthrough survey identifies a potential for exposure to hazardous materials or substances. (Workplace Monitoring Policy, 2009)

5.0 Health Monitoring

Health monitoring shall be implemented, when required, to protect workers from developing occupational diseases through the early identification of biological indicators or adverse health effects by informing a First Aid attendant or Occupational Health Physician in the event of (OHS Guidlines Part 5, 2012):

- Occurrence of symptoms or health effects as identified in this ECP;

- Exposure levels to an air contaminant are reported in excess of 50% of the 8 hour TWA exposure limits in accordance with OHS Regulations section 5.53. (OHS Regulations & Related Material, 2012); and
- Sufficient cause for concern has been identified by management or employees.

6.0 Education and Training:

Training and educating employees on the requirements and contents of this ECP is the responsibility of Work Cell supervisors in the following circumstances:

- Initial hiring;
- An employee is observed failing to meet the requirements of this ECP;
- In the event of an exposure related accident/incident; and
- After a revision to this ECP.

7.0 Hygiene and Decontamination:

Hygiene and decontamination practices shall be employed by Teleflex Canada and its employees to reduce the potential for exposure to designated substances.

Teleflex Canada shall ensure that the following are present and maintained:

- Adequate wash stations with soap and paper towels;
- Isolated facilities for eating away from areas at risk of exposure;
- Eye wash and shower facilities; and
- Provide Laundry services for worker coveralls and lab coats.

Teleflex Canada shall, as far as practicable, encourage the following hygiene procedures:

- Washing of hands prior to eating or drinking, and on completion of work shifts; and
- No eating, drinking or open food in production areas in accordance with the Teleflex Canada Eating or Open Food Notice (CD135) (2009)

8.0 Hazardous Material Introduction

The Hazardous Material Introduction Form (CF231) (2012) is to be used by any employee introducing any new substances into the workplace. Completion of the CF231 ensures that all materials and substances introduced to Teleflex Canada

which may be hazardous or pose an exposure risk are identified, and included in this ECP.

9.0 Documentation

The following documentation related to this ECP shall be completed by supervisors and forwarded to employee services for record keeping.

1. Internal Training Record

The Job Training Progress Form (CF085) (2010) shall include ECP training, and shall be updated upon completion of ECP training and refresher training by the employees supervisor. Job Training Progress forms shall be submitted to Employee Services for record keeping.

2. Accident/Incident Investigation Reports

The Accident/Incident Investigation Form (CF151) (2009) once completed shall be submitted to Employee Services were they will be held in accordance with Teleflex Canada's Retention and Destructive Policy (2012).

3. Respirator Fit Test Record

In accordance with Teleflex Canada`s Respirator Protection Program (2009) copies of respirator training and fit test records shall be submitted by supervisors to Employee Services. Records shall be updated as new employees are trained, receive refresher training, and on completion of new fit tests (Respirator Protection Program, 2009).

4. Exposure Control Plan Training Program Exam

The ECP Training Program Exam conducted by Manufacturing Supervisors, Joint Health and Safety Committee Members and Engineers shall be completed as part of the ECP Training Program and Submitted to Employee Services t be included in employee files.

5. MSDS for Designated substances

The MSDS for all designated Substances shall be included in:

- First Aid Rooms;
- The applicable Work Cell; and
- The Teleflex Canada Intranet MSDS Inventory.

10.0 Non-Compliance

The Exposure Control Plan has been designed to ensure the safety of workers and compliance with OHS Regulations. Failure to comply with this ECP may result in WorkSafeBC Administrative Penalties and potential prosecution.

1. WorkSafeBC imposed Administrative Penalties

Administrative Penalties up to $565,329.86 can be imposed on Teleflex as outlined in the Workers Compensation Act Part 3, Division 12, Section 196 (2012) contained in Appendix III of this document.

2. Collection of Levees from the employer WorkSafeBC

In the event of an accepted claim, WorkSafeBC may also impose a Levy on Teleflex to a maximum of $49,498.45 in accordance with the Workers Compensation Act Part 1, Division 5, Section 73 (2012) contained in Appendix III of this document.

3. Prosecution for Offences

In addition to penalties imposed to Teleflex, an officer, director or agent of Teleflex may be persecuted in accordance with the Workers Compensation Act Part 3, Division 15, section 213 (2012) contained in Appendix III of this document.

11.0 Exposure Control Plan Review

The Exposure Control Plan will be reviewed annually by the Joint Health and Safety Committee to ensure the following:

- Evaluate ECP effectiveness;
- Evaluate controls and work procedures to ensure they are up to date; (OHS Regulations & Related Material, 2012)
- Education and Training Related Documentation is up to date; (OHS Regulations & Related Material, 2012)
- The Designated Substances identified in the ECP are up to date; and
- First Aid and Accident/Incident reports and any reported exposure concerns are reviewed. (OHS Guidlines Part 5, 2012)

End

Appendix I: Risk Identification by Location

The Designated Substances identified in Appendix II have been identified as being present in the following Work Cell locations, at the indicated exposure levels:

1. BayStar® Ejection Molder:

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
BayStar® Ejection Molder	Formaldehyde	A2, S	1	0.3	0.0024

Written Work Procedures:
Prior to beginning work in the BayStar® Ejection Molder Work Cell employees must ensure:

1. Fitted ventilation is functioning properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the BayStar® Ejection Molder Work Cell.

Engineering Controls:
The BayStar® Ejection Molder fitted ventilation exhaust system will be used at all times during production processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances identified in the BayStar® Ejection Molder Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011)
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009);
- Appropriate Hand Protection in accordance with Teleflex Canada's Hand Protection Policy (CD113) (2007); and
- A Respirator if desired and issued in accordance with the Teleflex Canada's Respirator Protection Program (2009).

2. Grinder Area

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
Grinder Area	Carbon Monoxide	R		25	1

Written Work Procedures:
Prior to beginning work in the Grinder Area Work Cell employees must ensure:

1. Fitted ventilation is functioning properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Grinder Area Work Cell.

Engineering Controls:
The Grinder Area fitted ventilation exhaust system will be used at all times during production processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances identified in the BayStar® Ejection Molder Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011); and
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009).

3. Paint Room

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (ppm)	Results at Last Test (ppm)
Paint Room	Benzene	A1	1	0.5	<0.0068
	Ethyl benzene		2B	20	0.015
	Toluene	R		20	<0.029

Written Work Procedures:
Prior to beginning work in the Paint Room Work Cell employees must ensure:

1. Fitted ventilation is functioning properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Paint Room Work Cell.

Engineering Controls:
The Paint Room fitted ventilation exhaust system will be used in conjunction with respirators at all times during the painting processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances present in the Paint Room Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011);
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009);
- Appropriate Hand Protection in accordance with Teleflex Canada's Hand Protection Policy (CD113) (2007); and
- Use of a TC-19C Respirator is authorized and required in accordance with Teleflex Canada`s Respirator Protection Program (2009).

4. Proheat Electronics

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m^3)	Results at Last Test (mg/m^3)
Proheat Electronics	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	<0.00007
	Nickel	A1	1	0.05	<0.0004
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005

Written Work Procedures:
Prior to beginning work in the Proheat Electronics Work Cell employees must ensure:

1. Fitted ventilation/exhaust arm is functioning and adjusted properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Proheat Electronics Work Cell.

Engineering Controls:
The Proheat Electronics fitted ventilation/exhaust arm system will be used at all times during production processes. In the event of a ventilation system failure cease work immediately and inform the Work Cell supervisor.

PPE Controls:
As a result of the Designated Substances present in the Proheat Electronics Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011);
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009);
- Appropriate Hand Protection in accordance with Teleflex Canada's Hand Protection Policy (CD113) (2007); and
- A TC-21C Respirator if desired and issued in accordance with the Teleflex Canada's Respirator Protection Program (2009).

5. Proheat and Test Bench

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m^3)	Results at Last Test (mg/m^3)
Proheat and Test Bench	Coal Tar Pitch Volatile (CTPV)	A1	1	0.2	0.052
	Oil Mist, Mineral, Severely Refined	A1	1	1.0	<0.11

Written Work Procedures:
Prior to beginning work in the Proheat and Test Bench Work Cell employees must ensure:

1. Fitted ventilation is functioning properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Proheat and Test Bench Work Cell.

Engineering Controls:
The Proheat and Test Bench fitted ventilation exhaust system will be used at all times during production processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances present in the Proheat and Test Bench Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011); and
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009).

6. Trim Sender Assembly Area

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m^3)	Results at Last Test (mg/m^3)
Trim Sender Assembly Area	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	<0.00007
	Nickel	A1	1	0.05	<0.0004
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005

Written Work Procedures:
Prior to beginning work in the Trim Sender Assembly Area Work Cell employees must ensure:

1. Fitted ventilation is functioning properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Trim Sender Assembly Area Work Cell.

Engineering Controls:
The Trim Sender Assembly Area fitted ventilation exhaust system will be used at all times during production processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances present in the Trim Sender Assembly Area Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011);
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009);
- Appropriate Hand Protection in accordance with Teleflex Canada's Hand Protection Policy (CD113) (2007); and
- A TC-21C Respirator if desired and issued in accordance with the Teleflex Canada's Respirator Protection Program (2009).

7. Welding Burlytic Area

Work Cell Location	Designated Substances	ACGIH Identifier(s)	IARC Identifier(s)	8 hour TWA (mg/m^3)	Results at Last Test (mg/m^3)
Welding Burlytic Area	Arsenic	A1	1	0.01	<0.0007
	Beryllium	A1, S	1	0.002	<0.00007
	Cadmium	A2	1	0.01	<0.0002
	Cobalt		2B	0.02	<0.0004
	Lead	R	2A, 2B	0.05	<0.0007
	Manganese	R		0.2	0.00049
	Nickel	A1	1	0.05	0.0017
	Titanium Dioxide		2B	10	<0.0003
	Vanadium Pentoxide		2B	0.2	<0.0005

Written Work Procedures:
Prior to beginning work in the Welding Burlytic Work Cell employees must ensure:

1. Portable filtered ventilation system is functioning and adjusted properly;
2. Required and appropriate PPE is worn;
3. Standardized Work Instructions for the Work Cell are adhered to; and
4. Any deficiencies in ventilation, PPE or production Equipment are reported to supervisors immediately.

Controls:
In order to further reduce the risk of exposure the following engineering and PPE controls shall be utilized during the performance of an employee's duties in the Welding Burlytic Work Cell.

Engineering Controls:
The Welding Burlytic area portable filtered ventilation system will be used at all times during production processes. Should the ventilation system fail at any point cease work immediately and inform the work cell supervisor.

PPE Controls:
As a result of the Designated Substances present in the Welding Burlytic Work Cell the following PPE shall be used:

- Safety Glasses (Wearing Safety Glasses Policy, 2011);
- Teleflex Canada provided or approved Coveralls or Lab coats in accordance with the Teleflex Canada's Dress Code (CD134) (2009);
- Appropriate Hand Protection in accordance with Teleflex Canada's Hand Protection Policy (CD113) (2007); and
- A TC-21C Respirator if desired and issued in accordance with the Teleflex Canada's Respirator Protection Program (2009)

Appendix II: Designated Substances at Teleflex

The Designated Substances identified at Teleflex Canada, including the associated risks and health effects are as follows:

1. Arsenic

Risk Identification:
Arsenic has been identified as ACGIH A1 (Table of exposure limits, 2011), meaning Arsenic is a confirmed human carcinogen, and IARC 1 (Table of exposure limits, 2011), meaning there is sufficient evidence that Arsenic is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Arsenic:
Exposure to Arsenic can occur through, but is not limited to, the following:

- Ingestion (Very Hazardous) (Arsenic MSDS, 2010);
- Inhalation (Very Hazardous) (Arsenic MSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Arsenic MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.01(mg/m^3) (Arsenic MSDS, 2010) (Table of exposure limits, 2011).

Health Effects:

Potential symptoms of Exposure to Arsenic:
The symptoms that result from exposure to Arsenic may include, but are not limited to the following:

- Skin Irritation(Arsenic MSDS, 2010); and
- Eye Irritation (Arsenic MSDS, 2010).

Potential Long-term Effects of Exposure to Arsenic:
The long-term health effects that result from exposure to Arsenic may include, but may not be limited to the following:

- Damage to the lungs, kidneys, mucous membranes and Central Nervous System (Arsenic MSDS, 2010).

2. Benzene

Risk Identification:
Benzene has been identified as ACGIH A1 (Table of exposure limits, 2011) (Benzene MSDS, 2012), meaning Benzene is a confirmed human carcinogen, and IARC 1 (Table of exposure limits, 2011), meaning there is sufficient evidence that Benzene is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Benzene:
Exposure to Benzene can occur through, but is not limited to, the following:

- Inhalation (Very Hazardous) (Benzene MSDS, 2012); and
- Absorption through Skin and Eyes (Hazardous)(Benzene MSDS, 2012).

Exposure Limit:
The 8 hour TWA is assessed at 0.5 (ppm) (Table of exposure limits, 2011) (Benzene MSDS, 2012).

Health Effects:

Potential symptoms of Exposure to Benzene:
The symptoms that result from exposure to Benzene may include, but may not be limited to the following:

- Severe Eye Irritation including redness, watering and itching (Benzene MSDS, 2012).

Potential Long-term Effects of Exposure to Benzene:
The long-term health effects that result from exposure to Benzene may include, but may not be limited to the following:

- Causes Damage to lungs, bone marrow, and Central Nervous System (CNS) (Benzene MSDS, 2012); and
- May cause damage to Liver and Urinary System (Benzene MSDS, 2012).

3. Beryllium

Risk Identification:
Beryllium has been identified as ACGIH A1, meaning Beryllium is a confirmed human carcinogen, and IARC 1, meaning there is sufficient evidence that Beryllium is a human carcinogen (OHS Guidlines Part 5, 2012). Beryllium is also identified as a Sensitizer by ACGIH (Table of exposure limits, 2011).

Possible method(s) of Exposure to Beryllium:
Exposure to Beryllium can occur through, but is not limited to, the following:

- Inhalation (Very Hazardous); (Beryllium MSDS, 1992)
- Contact with Eyes (Hazardous). (Beryllium MSDS, 1992)
- Contact with Skin (Hazardous). (Beryllium MSDS, 1992)

Exposure Limit:
The 8 hour TWA is assessed at 0.002(mg/m^3). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Beryllium:
The symptoms that result from exposure to Beryllium may include, but may not be limited to the following:

- Eye Irritation; and (Beryllium MSDS, 1992)
- Skin Irritation. (Beryllium MSDS, 1992)
- Cough and Shortness of Breath; (Beryllium MSDS, 1992)
- Weakness and Fatigue; and (Beryllium MSDS, 1992)
- Chest Pain. (Beryllium MSDS, 1992)

Potential Long-term Effects of Exposure to Beryllium:
The long-term health effects that result from exposure to Beryllium may include, but may not be limited to the following:

- Lung disease (Beryllium MSDS, 1992);
- May cause damage to the Heart(Beryllium MSDS, 1992) ; and
- Fibrosis (Beryllium MSDS, 1992).

4. Cadmium

Risk Identification:
Cadmium has been identified as ACGIH A2 (Cadmium MSDS, 2010), meaning Cadmium is suspected as a human carcinogen, and IARC 1 (Cadmium MSDS, 2010), meaning there is sufficient evidence that Cadmium is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Cadmium:
Exposure to Cadmium can occur through, but is not limited to, the following:

- Ingestion (Hazardous) (Cadmium MSDS, 2010); and
- Inhalation (Hazardous) (Cadmium MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.01(mg/m^3) (Table of exposure limits, 2011).

Health Effects:

Potential symptoms of Exposure to Cadmium:
The symptoms that result from exposure to Cadmium may include, but may not be limited to the following:

- Eye Irritation (Cadmium MSDS, 2010); and
- Skin Irritation (Cadmium MSDS, 2010).

Potential Long-term Effects of Exposure to Cadmium:
The long-term health effects that result from exposure to Cadmium may include, but may not be limited to the following:

- May cause damage to Liver, Kidney and Lungs; and (Cadmium MSDS, 2010); and
- Severe over-exposure can result in death (Cadmium MSDS, 2010).

5. Carbon Monoxide

Risk Identification:
Carbon Monoxide has been identified as ACGIH Reproductive Toxin (R) (Table of exposure limits, 2011), meaning Carbon Monoxide has the potential to cause adverse reproductive effects on female and male reproductive organs, tissues, or cells; on fertility; on the embryo or fetus; and may result in developmental abnormalities; tumors; and adverse effects on a newborn (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Carbon Monoxide:
Exposure to Carbon Monoxide can occur through, but may not be limited to, the following:

- Inhalation (Very Hazardous) (Carbon Monoxide MSDS, 2009);
- Absorption through Eyes (Slightly Hazardous)(Carbon Monoxide MSDS, 2009); and
- Absorption through Skin (Slightly Hazardous) (Carbon Monoxide MSDS, 2009).

Exposure Limit:
The 8 hour TWA is assessed at 25 (ppm). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Carbon Monoxide:
The symptoms that result from exposure to Carbon Monoxide may include, but may not be limited to the following:

- Nausea and vomiting (Carbon Monoxide MSDS, 2009);
- Headache; Drowsiness, Dizziness and Fatigue (Carbon Monoxide MSDS, 2009);
- Loss of Hearing, Vision and Coordination (Carbon Monoxide MSDS, 2009);
- Difficulty Breathing and Irregular Heartbeat (Carbon Monoxide MSDS, 2009);
- Convulsions and tremors (Carbon Monoxide MSDS, 2009);
- Change in body Temperature and Bluish Skin Colour (Carbon Monoxide MSDS, 2009); and
- Pain in extremities. (Carbon Monoxide MSDS, 2009)

Potential Long-term Effects of Exposure to Carbon Monoxide:
The long-term health effects that result from exposure to Carbon Monoxide may include, but are not limited to the following:

- Damage to Blood, Heart, Nerves and Brain. (Carbon Monoxide MSDS, 2009)

6. Coal Tar Pitch Volatile (CTPV)

Risk Identification:
CTPV has been identified as ACGIH A1, meaning CTPV is a confirmed human carcinogen, and IARC 1, meaning there is sufficient evidence that CTPV is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to CTPV:
Exposure to CTPV can occur through, but is not limited to, the following:

- Ingestion (Slightly Hazardous) (CTPV , 2010);
- Inhalation (Slightly Hazardous) (CTPV , 2010); and
- Absorption through Skin and Eyes (Slightly Hazardous) (CTPV , 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.2(mg/m^3) (Table of exposure limits, 2011).

Health Effects:

Potential symptoms of Exposure to CTPV:
The symptoms that result from exposure to CTPV may include, but may not be limited to the following:

- Respiratory Tract Irritation (CTPV , 2010);
- Severe gastrointestinal tract irritation with nausea, and vomiting (CTPV , 2010);
- Lung Inflammation (CTPV , 2010);
- Eye Irritation (CTPV , 2010); and
- Skin Irritation (CTPV , 2010).

Potential Long-term Effects of Exposure to CTPV:
The long-term health effects that result from exposure to CTPV may include, but are not limited to the following:

- Damage to the skin, eyes, Central Nervous System (CNS), or Gallbladder (CTPV , 2010); and
- Development of Dermatitis, Melanosis, Pneumonitis, and Pulmonary Vessel Thrombosis (CTPV , 2010).

7. Cobalt

Risk Identification:
Cobalt has been identified as IARC 2B (Table of exposure limits, 2011), meaning there is evidence that Cobalt is possibly a carcinogen to humans (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Cobalt:
Exposure to Cobalt can occur through, but is not limited to, the following:

- Ingestion (Hazardous); (Cobalt MSDS, 2010)
- Inhalation (Hazardous); and (Cobalt MSDS, 2010)
- Absorption through Skin and Eyes (Hazardous). (Cobalt MSDS, 2010)

Exposure Limit:
The 8 hour TWA is assessed at 0.02(mg/m^3). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Cobalt:
The symptoms that result from exposure to Cobalt may include, but are not limited to the following:

- Eye Irritation (Cobalt MSDS, 2010); and
- Skin Irritation (Cobalt MSDS, 2010).

Potential Long-term Effects of Exposure to Cobalt:
The long-term health effects that result from exposure to Cobalt may include, but are not limited to the following:

- Damage to Lungs (Cobalt MSDS, 2010).

8. Ethyl Benzene

Risk Identification:
Ethyl Benzene has been identified as IARC 2B (Table of exposure limits, 2011), meaning there is evidence that Ethyl Benzene is possibly a carcinogen to humans (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Ethyl Benzene:
Exposure to Ethyl Benzene can occur through, but is not limited to, the following:

- Ingestion (Hazardous) (Ethyl Benzene MSDS, 2010);
- Inhalation (Hazardous) (Ethyl Benzene MSDS, 2010);
- Absorption through Eyes (Hazardous) (Ethyl Benzene MSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Ethyl Benzene MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 20 (ppm). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Ethyl Benzene:
The symptoms that result from exposure to Ethyl Benzene may include, but may not be limited to the following:

- Skin Irritation. (Ethyl Benzene MSDS, 2010)

Potential Long-term Effects of Exposure to Ethyl Benzene:
The long-term health effects that result from exposure to Ethyl Benzene may include, but may not be limited to the following:

- Damage to Central Nervous System (CNS). (Ethyl Benzene MSDS, 2010)

9. Formaldehyde

Risk Identification:
Formaldehyde has been identified as ACGIH A2 (Table of exposure limits, 2011), meaning Formaldehyde is a suspected human carcinogen, and IARC 1 (Table of exposure limits, 2011), meaning there is sufficient evidence that Formaldehyde is a human carcinogen (OHS Guidlines Part 5, 2012). Formaldehyde is also identified as a Sensitizer by ACGIH (Table of exposure limits, 2011).

Possible method(s) of Exposure to Formaldehyde:
Exposure to Formaldehyde can occur through, but is not limited to, the following:

- Ingestion (Very Hazardous) (Formaldehyde MSDS, 2010);
- Absorption through Eyes (Very Hazardous) (Formaldehyde MSDS, 2010);
- Absorption through Skin (Hazardous) (Formaldehyde MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.3 (ppm). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Formaldehyde:
The symptoms that result from exposure to Formaldehyde may include, but may not be limited to the following:

- Severe Eye Irritation including redness, watering and itching (Formaldehyde MSDS, 2010); and
- Skin Irritation (Formaldehyde MSDS, 2010).

Potential Long-term Effects of Exposure to Formaldehyde:
The long-term health effects that result from exposure to Formaldehyde may include, but may not be limited to the following:

- May damage Kidneys, Liver, Skin and Central Nervous System (CNS) (Formaldehyde MSDS, 2010); and
- Severe over-exposure can result in death (Formaldehyde MSDS, 2010).

10. Lead

Risk Identification:
Lead has been identified as ACGIH Reproductive Toxin (R) (Table of exposure limits, 2011), meaning Lead has the potential to cause adverse reproductive effects on female and male reproductive organs, tissues, or cells; on fertility; on the embryo or fetus; and may result in developmental abnormalities; tumors; and adverse effects on a newborn (OHS Guidlines Part 5, 2012). Lead has also been identified as IARC 2A and 2B, meaning Lead is probably carcinogenic to humans (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Lead:
Exposure to Lead can occur through, but is not limited to, the following:

- Ingestion (Hazardous) (Lead DSDS, 2010);
- Inhalation (Hazardous) (Lead DSDS, 2010);
- Absorption through Eyes (Hazardous) (Lead DSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Lead DSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.05(mg/m^3). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Lead:
The symptoms that result from exposure to Lead may include, but may not be limited to the following:

- Eye Irritation(Lead DSDS, 2010); and
- Skin Irritation (Lead DSDS, 2010).

Potential Long-term Effects of Exposure to Lead:
The long-term health effects that result from exposure to Lead may include, but may not be limited to the following:

- May damage Blood, Kidneys, and Central Nervous System (CNS). (Lead DSDS, 2010)

11. Manganese

Risk Identification:
Manganese has been identified as ACGIH Reproductive Toxin (R) (Table of exposure limits, 2011), meaning Manganese has the potential to cause adverse reproductive effects on female and male reproductive organs, tissues, or cells; on fertility; on the embryo or fetus; and may result in developmental abnormalities; tumors; and adverse effects on a newborn (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Manganese:
Exposure to Manganese can occur through, but is not limited to, the following:

- Inhalation (Hazardous) (Manganese MSDS, 2010)
- Ingestion (Slightly Hazardous) (Manganese MSDS, 2010);
- Absorption through Eyes (Slightly Hazardous) (Manganese MSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Manganese MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.2(mg/m^3) (Table of exposure limits, 2011).

Health Effects:

Potential symptoms of Exposure to Manganese:
The symptoms that result from exposure to Manganese may include, but may not be limited to the following:

- Eye Irritation (Manganese MSDS, 2010); and
- Skin Irritation (Manganese MSDS, 2010).

Potential Long-term Effects of Exposure to Manganese:
The long-term health effects that result from exposure to Manganese may include, but may not be limited to the following:

- May damage Blood, Lungs, Brain, and Central Nervous System (CNS). (Manganese MSDS, 2010)

12. Nickel

Risk Identification:
Nickel has been identified as ACGIH A1 (Table of exposure limits, 2011), meaning Nickel is a confirmed human carcinogen, and IARC 1 (Table of exposure limits, 2011), meaning there is sufficient evidence that Nickel is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Nickel:
Exposure to Nickel can occur through, but is not limited to, the following:

- Inhalation (Hazardous) (Nickel MSDS, 2010);
- Ingestion (Slightly Hazardous) (Nickel MSDS, 2010);
- Absorption through Eyes (Slightly Hazardous) (Nickel MSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Nickel MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.05(mg/m^3). (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Nickel:
The symptoms that result from exposure to Nickel may include, but may not be limited to the following:

- Eye Irritation (Nickel MSDS, 2010); and
- Skin Irritation (Nickel MSDS, 2010).

Potential Long-term Effects of Exposure to Nickel:
The long-term health effects that result from exposure to Nickel may include, but may not be limited to the following:

- Damage to the skin (Nickel MSDS, 2010); and
- May damage Kidneys, Lungs, Liver and Upper Respiratory Track. (Nickel MSDS, 2010).

13. Titanium Dioxide

Risk Identification:
Titanium Dioxide has been identified as an IARC 2B substance, meaning there is possibility that Titanium Dioxide is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Titanium Dioxide:
Exposure to Titanium Dioxide can occur through, but is not limited to, the following:

- Inhalation (Slightly Hazardous) (Titanium Dioxide MSDS, 2010);
- Ingestion (Slightly Hazardous) (Titanium Dioxide MSDS, 2010);
- Absorption through Eyes (Slightly Hazardous) (Titanium Dioxide MSDS, 2010); and
- Absorption through Skin (Slightly Hazardous) (Titanium Dioxide MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 10 (mg/m^3) (Table of exposure limits, 2011)

Health Effects:

Potential symptoms of Exposure to Titanium Dioxide:
The symptoms that result from exposure to Titanium Dioxide may include, but may not be limited to the following:

- Eye Irritation(Titanium Dioxide MSDS, 2010); and
- Skin Irritation (Titanium Dioxide MSDS, 2010).

Potential Long-term Effects of Exposure to Titanium Dioxide:
The long-term health effects that result from exposure to Titanium Dioxide may include, but may not be limited to the following:

- May damage Lungs and Upper Respiratory Tract (Titanium Dioxide MSDS, 2010).

14. Toluene

Risk Identification:
Toluene has been identified as ACGIH Reproductive Toxin (R) (Table of exposure limits, 2011), meaning Toluene has the potential to cause adverse reproductive effects on female and male reproductive organs, tissues, or cells; on fertility; on the embryo or fetus; and may result in developmental abnormalities; tumors; and adverse effects on a newborn (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Toluene:
Exposure to Toluene can occur through, but is not limited to, the following:

- Inhalation (Hazardous) (Toluene MSDS, 2010);
- Ingestion (Hazardous) (Toluene MSDS, 2010);
- Absorption through Eyes (Hazardous) (Toluene MSDS, 2010); and
- Absorption through Skin (Hazardous) (Toluene MSDS, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 20 (ppm) (Toluene MSDS, 2010).

Health Effects:

Potential symptoms of Exposure to Toluene:
The symptoms that result from exposure to Toluene may include, but may not be limited to the following:

- Eye Irritation(Toluene MSDS, 2010); and
- Skin Irritation (Toluene MSDS, 2010).

Potential Long-term Effects of Exposure to Toluene:
The long-term health effects that result from exposure to Toluene may include, but may not be limited to the following:

- May damage blood, kidneys, nervous system, liver, brain and Central Nervous System (CNS) (Toluene MSDS, 2010).

15. Vanadium Pentoxide

Risk Identification:
Vanadium Pentoxide has been identified as an IARC 2B substance, meaning there is possibility that Vanadium Pentoxide is a human carcinogen (OHS Guidlines Part 5, 2012).

Possible method(s) of Exposure to Vanadium Pentoxide:
Exposure to Vanadium Pentoxide can occur through, but is not limited to, the following:

- Inhalation (Very Hazardous) (Vanadium Pentoxide, 2010);
- Ingestion (Very Hazardous) (Vanadium Pentoxide, 2010);
- Absorption through Eyes (Hazardous) (Vanadium Pentoxide, 2010); and
- Absorption through Skin (Hazardous) (Vanadium Pentoxide, 2010).

Exposure Limit:
The 8 hour TWA is assessed at 0.2 (mg/m^3) (Table of exposure limits, 2011).

Health Effects:

Potential symptoms of Exposure to Vanadium Pentoxide:
The symptoms that result from exposure to Vanadium Pentoxide may include, but may not be limited to the following:

- Eye Irritation(Vanadium Pentoxide, 2010); and
- Skin Irritation. (Vanadium Pentoxide, 2010).

Potential Long-term Effects of Exposure to Vanadium Pentoxide:
The long-term health effects that result from exposure to Vanadium Pentoxide may include, but are not limited to the following:

- May damage Gastrointestinal Tract, Upper Respiratory Tract and Skin (Vanadium Pentoxide, 2010); and
- Severe over-exposure can result in death (Vanadium Pentoxide, 2010).

Appendix III: Legislation

Occupational Health and Safety Regulation 5.54 and 5.57 (2012)

5.54 Exposure control plan

(1) An exposure control plan must be implemented when

(a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit,

(b) measurement is not possible at 50% of the applicable exposure limit, or

(c) otherwise required by this Regulation.

(2) The exposure control plan must incorporate the following elements:

(a) a statement of purpose and responsibilities;

(b) risk identification, assessment and control;

(c) education and training;

(d) written work procedures, when required;

(e) hygiene facilities and decontamination procedures, when required;

(f) health monitoring, when required;

(g) documentation, when required.

(3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable.

5.57 Designated substances

(1) If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers:

(a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen;

(b) ACGIH reproductive toxin;

(c) ACGIH sensitizer;

(d) ACGIH L endnote.

(2) If it is not practicable to substitute a material which reduces the risk to workers, in accordance with subsection (1), the employer must implement an exposure control plan to maintain workers' exposure as low as reasonably achievable below the exposure limit established under section 5.48.

Workers Compensation Act of BC (2012)

Part 1 Division 5 – Procedure and Miscellaneous
Levy from employer to cover amount of compensation

73 (1) If

(a) an injury, death or disablement from occupational disease in respect of which compensation is payable occurs to a worker, and

(b) the Board considers that this was due substantially to

(i) the gross negligence of an employer,

(ii) the failure of an employer to adopt reasonable means for the prevention of injuries, deaths or occupational diseases, or

(iii) the failure of an employer to comply with the orders or directions of the Board, or with the regulations made under Part 3 of this Act,

the Board may levy and collect from that employer as a contribution to the accident fund all or part of the amount of the compensation payable in respect of the injury, death or occupational disease, to a maximum of $49 498.45.

Part 3 Division 12 – Enforcement
Administrative Penalties

196

(1) The Board may, by order, impose an administrative penalty on an employer under this section if it considers that

(a) the employer has failed to take sufficient precautions for the prevention of work related injuries or illnesses,

(b) the employer has not complied with this Part, the regulations or an applicable order, or

(c) the employer's workplace or working conditions are not safe.

(2) An administrative penalty which is greater than $596 435.35 must not be imposed under this section.

Part 3 Division 15 – Offences
Offence to contravene Part, regulation or order

213

(1) A person who contravenes a provision of this Part, the regulations or an order commits an offence.

(2) If a corporation commits an offence referred to in subsection (1), an officer, director or agent of the corporation who authorizes, permits or acquiesces in the commission of the offence also commits an offence.

(3) Subsection (2) applies whether or not the corporation is prosecuted for the offence.

Appendix K ECP Training Program Exam and Answer Key

Teleflex®

Teleflex Canada

Exposure Control Plan Training Program Exam

CF

Employee Name: _____ Employee Number: _____

Trainer Name: _____ Date: _____

This exam is comprised of 10 short answer, multiple choice or fill in the blank questions in order to assess an employee's knowledge of Teleflex Canada Inc.'s Exposure Control Plan. 20 minutes will be provided to complete the exam. A minimum score of 80% or 8 0ut of 10 is required to pass the exam.

1) Provide one example of when a Walkthrough Survey shall be completed:
Answer:_____

_____

_____

2) Provide an example of when Exposure Control Plan training is required:
Answer:_____

_____

_____

3) How frequently must the Exposure Control Plan be reviewed?
Answer:_____

_____

_____

4) How is a substance or material identified as a Designated Substance?
Answer:_____

_____

_____

5) What is an 8 hour Time Weighted Average (TWA)?
Answer:_____

_____

_____

6) ACGIH A1 or A2, and IARC 2A or 2B indicate that a substance is a _____, and is thereby considered a Designated Substance.

1/2

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CF

7) Using the table provided, calculate the Time Weighted Average (TWA) for a hazardous substance with an 8 hour TWA of 0.05, if an employee is required to work for 11.5 hours in area where there is an exposure risk?

Factor	Length of work period (in hours)
0.7	more than 8, but not more than 10
0.5	more than 10, but not more than 12
0.25	more than 12, but not more than 16
0.1	more than 16

Answer:_____

8) If a hazardous substance is introduced to the workplace, but it is not considered a designated Substance in accordance with OHS Regulations section 5.57, when is it required to be included in the ECP?
Answer:_____

_____

_____

9) A Designated Substance is any substance or material that is:
   a) A carcinogen, reproductive toxin and/or a sensitizer
   b) An exposure hazard
   c) Present in excess of 50% of its indicated 8 hour TWA
   d) All of the above

10) Where is the Exposure Control Plan located?
Answer:_____

Total ___/10
Pass / Fail

This form is to be filed in the employee's record by Employee Services

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Teleflex Canada

Exposure Control Plan
Training Program Exam Answer Key

CF

This exam answer key provides the acceptable answers for the Exposure Control Plan Exam.

1) Provide one example of when a Walkthrough Survey shall be completed:
   Answer:
   Any one of the following is an acceptable answer
   - Monthly;
   - After a change to a production Work Cell set up;
   - After a change to a production process;
   - On the introduction of new production Work Cells or equipment.

2) Provide an example of when Exposure Control Plan training is required:
   Answer:
   Any one of the following is an acceptable answer
   - Initial hiring;
   - An employee is observed failing to meet the requirements of this ECP;
   - In the event of an exposure related incident; and
   - After a revision to the ECP.

3) How frequently must the Exposure Control Plan be reviewed?
   Answer:

   Annually

4) How is a substance or material identified as a Designated Substance?
   Answer:

   Using the Table of Exposure Limits for Chemical and Biological Substances provided by WorkSafeBC.

5) What is an 8 hour Time Weighted Average (TWA)?
   Answer:

   The 8 hour Time Weighted Average (TWA) is the concentration of a substance in the air which may not be exceeded over a normal 8 hour work period.

6) ACGIH A1 or A2, and IARC 2A or 2B indicate that a substance is a Carcinogen, and is thereby considered a Designated Substance.

7) Using the table provided, calculate the Time Weighted Average (TWA) for a hazardous substance with an 8 hour TWA of 0.05 (ppm), if an employee is required to work for 11.5 hours in area where there is an exposure risk?

Factor	Length of work period (in hours)
0.7	more than 8, but not more than 10
0.5	more than 10, but not more than 12
0.25	more than 12, but not more than 16
0.1	more than 16

Answer:
0.05 (ppm) * Factor 0.5 (11.5 hours is more than 10 but not more than 12 hours) = 0.025(ppm)

8) If a hazardous substance is introduced to the workplace, but it is not considered a designated Substance in accordance with OHS Regulations section 5.57, when is it required to be included in the ECP?
Answer:

Any one of the following is an acceptable answer

- exposure monitoring indicates that a worker is or may be exposed to an air contaminant in excess of 50% of its exposure limit
- air contaminant measurement is not possible at 50% of the applicable exposure limit

9) A Designated Substance is any substance or material that is:
Answer:
a) A carcinogen, reproductive toxin and/or a sensitizer

10) Where is the Exposure Control Plan located?
Answer:
Any one of the following is an acceptable answer

- Teleflex's OHS Intranet page
- Employee Services
- First Aid rooms
- Supervisor
- Notice Board

Note: A minimum score of 80% or 8/10 is required to pass this exam.